

# The use of bone and antler at Foshigarry and Bac Mhic Connain, two Iron Age sites on North Uist, Western Isles\*

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illustrations by Marion O’Neil†

## ABSTRACT

*The rich collections of bone and antler objects from Foshigarry and Bac Mhic Connain, two Iron Age wheelhouse complexes on North Uist, are analysed to determine the raw materials used (species and anatomical parts) and the production technology of artefact manufacture. Comparison is made with contemporary assemblages and a picture of the exploitation of animals on these sites attempted.*

*A wide range of objects is represented in the assemblages, primarily tools, with a few ornaments. Working debris and part-finished objects are also identified, allowing some manufacturing processes to be determined in detail. The selection of raw materials shows an adaption to the local conditions (eg in the use of whale bone) and a clear appreciation of the functional value of different materials and bone types.*

*Fresh examination identified some important, previously unrecognized objects, including a whale-bone vertebral disc with ogam-like decorations which had been used as a trial piece for an interlace pattern.*

## INTRODUCTION

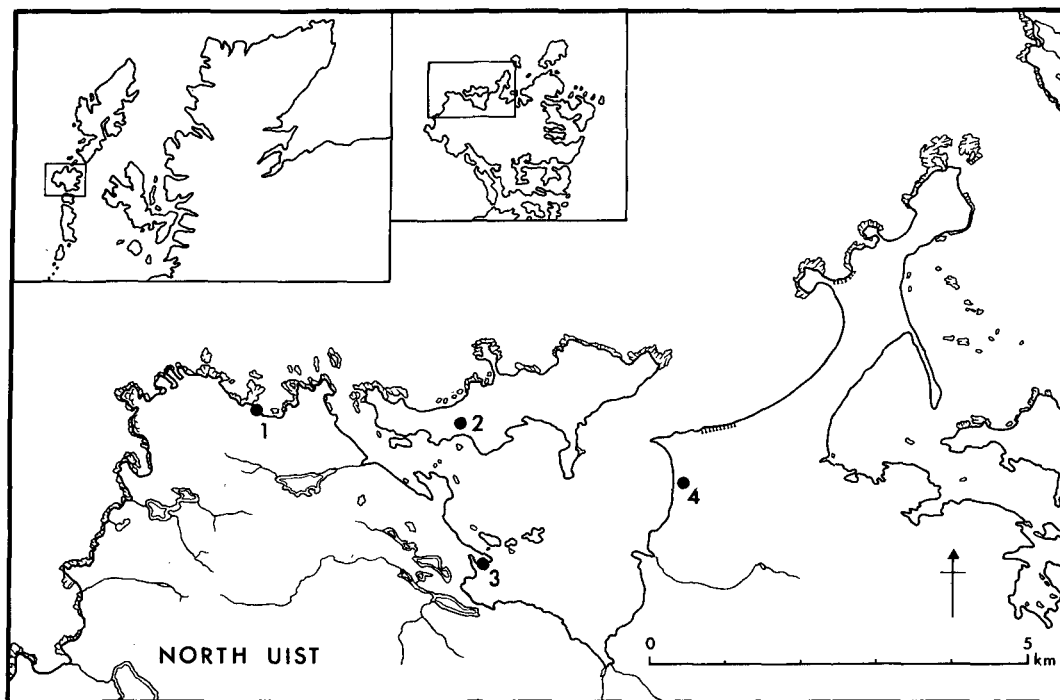
The two sites of Foshigarry and Bac Mhic Connain were excavated by Erskine Beveridge just before and after the First World War (Beveridge & Callander 1931; 1932). Both sites are in the Vallay area of North Uist (illus 1, nos 1–2) and date broadly to the Iron Age.

The site of Foshigarry was discovered in 1911, and a group of six structures, A–F (illus 2A), was subsequently excavated. Structures A–C were three large wheelhouses, each about 9 m in diameter: B and C were damaged by later buildings, while A had been reduced by tidal erosion. The smaller structures, D–F, were cellular without radial walls. A long passage-like building (H) and a secondary kiln or oven (G) were also discovered.

Bac Mhic Connain was discovered by Beveridge in the autumn of 1919. Two circular chambers (A and D) and two smaller, quadrangular structures between them (B and C) (illus 2B)

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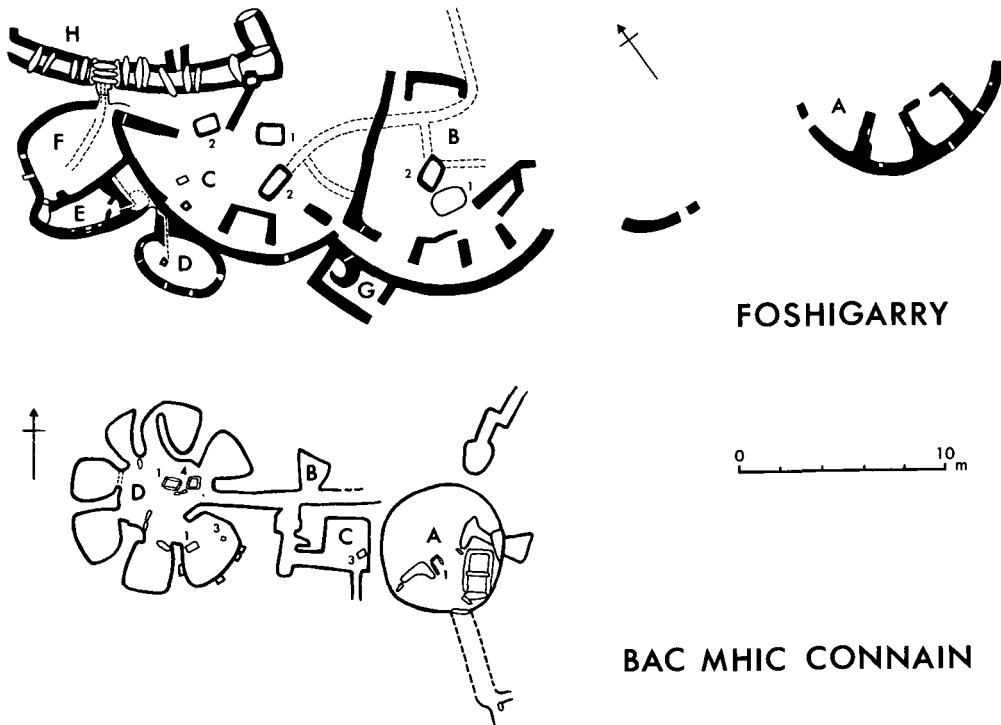


ILLUS 1 Site location map with other wheelhouse sites. 1 Foshigarry; 2 Bac Mhic Connain; 3 Garry Iochdrach; 4 Sollas (Drawn by Marion O'Neil). Based upon the Ordnance Survey map © Crown copyright

were excavated that year. The largest structure, D, 8.2 m by 8.8 m, was the only definite wheelhouse on the site. In it was found a structure which Beveridge believed to be a furnace (illus 2B no 4). Although it contained no ashes, two complete crucibles and an imperfect one were found, the latter containing vestiges of bronze slag together with bones or antler. Structure A, with parts of radiating walls, was nearly 6 m in diameter. Beveridge found structural evidence for prolonged use of Bac Mhic Connain, but there is little or no record of stratigraphy relevant to the artefacts at either site. Indeed, it is clear that at Foshigarry many of the finds were recovered from subsequent sieving of the excavated soil (Beveridge & Callander 1931, 311).

Draft reports of Beveridge's discoveries at Foshigarry and a working diary of his operations at Bac Mhic Connain were made available to the former National Museum of Antiquities in Edinburgh (now the National Museums of Scotland – hereafter NMS), and from them Graham Callander, then Director of the National Museum, compiled reports for publication. However, only parts of the excavated assemblages were presented to the National Museum (Beveridge & Callander 1931, 322–3), and it has not been possible to locate Beveridge's documentation.

Totals of 261 skeletal and antler remains from Foshigarry and 107 from Bac Mhic Connain are now in the NMS (Table 1). Apart from these, 277 other bone and antler fragments were found at Bac Mhic Connain but were not presented to the National Museum and are presumed to be no longer extant. These were: 70 bones showing cut-marks; 130 pieces of antler; 70 fragments of cetacean bone, including a vertebral epiphysis; five whale vertebrae; one large slab of cetacean



ILLUS 2 Plans of the structures at Foshigarry and Bac Mhic Connain. 1 Hearth. 2 Sink. 3 Stone box. 4 Furnace. (Drawn by Marion O'Neil (after Beveridge & Callander 1931–2))

bone; and a boar's tusk (Beveridge & Callander 1932, 61). A similar list of the bones now missing from the assemblage at Foshigarry was not given in the published report.

The incomplete nature of the surviving assemblages and the absence (with a few exceptions) of unworked bones prevents a proper study of the economy at the sites. Hence the emphasis for this work has been on artefacts, from which useful information on animal utilization can nevertheless be obtained.

The study was undertaken on behalf of the NMS as part of a wider project to upgrade the information on bone and antler items intended for display in the new Museum of Scotland. The specific aim in this instance was to catalogue all the bone and antler material from the two sites and to identify wherever possible the species and anatomical parts used for the implements and the techniques used to manufacture them. The two assemblages were registered on a computerized database in terms of physical description, dimensions, bone type, and species (NMS archive). The NMS registration code is GNA for Foshigarry and GNB for Bac Mhic Connain, accompanied by a number, and these designations are used throughout the text to refer to specific objects. A key to the objects illustrated by Beveridge & Callander (1931; 1932), listed by NMS registration numbers, and a concordance between the illustrations in the original publications and the catalogue numbers used here are on fiche. Table 1 shows the numbers of each artefact type from the two sites surviving in the NMS collections, and the characteristics of the objects now in the NMS collections can be found in Table 2.

TABLE 1  
Numbers of each artefact type from Foshigarry and Bac Mhic Connain surviving in the NMS collections

	FOSHIGARRY	BAC MHIC CONNAIN
Antler implements (other)	7	7
Antler picks	2	—
Antler rings	—	9
Antler working debris	16	6
Awls	12	6
Bone dice	1	1
Bone working debris	1	4
Cetacean bone working debris/blanks for other objects	2	8
Cetacean implements (other)	6	4
Cetacean bone plaques	3	—
Cetacean bone: worked	2	—
Cetacean vertebrae containers & lids	14	1
Composite combs	2	—
Hafted implements	10	3
Handles	23	14
Long-handled combs	4	4
Mirror handle	—	1
Miscellaneous antler objects	3	1
Miscellaneous cetacean bone objects	7	—
Modelling tools	4	1
Notched implements & related types	34	1
Pendants	—	3
Perforated bones	—	2
Perforated plates	3	—
Perforated points	10	2
Pins	7	1
Pinheads	1	1
Points	34	8
Points/pins	8	1
Polishers/hide-working tools	5	—
Socketed femur-heads	—	2
Spatulae	3	4
Spatulate arrowheads	1	1
Spindle whorls	3	—
Stamp	—	1
Tubes	1	1
Turned objects	10	4
Two-pronged implements	3	1
Two-pronged object	—	1
Unworked bones	12	1
Wedges	—	2
Worked bones	7	—
Totals	261	107

The remarkable nature and importance of the bone and antler finds from these two sites have been apparent since their initial publication, and many of them have become more generally familiar from being on display for decades in the Findlay Building gallery in Queen Street, Edinburgh. The justification for further publication is the provision of a quantified reassessment in terms of modern osteological reporting, which allows new insights into the selection and use of raw materials. At the same time the opportunity is taken to update discussion of aspects of the assemblages in the light of current knowledge of Iron Age bone- and antler-working.

The classification of the artefacts is based on their morphology and supposed use, and on the properties of the raw materials used, mainly following Foxon's (1991) classification of artefacts from the Broch of Midhowe, Orkney, and the wheelhouse at Sollas, North Uist. Where a category does not strictly follow that of Foxon, references to parallels from other sites are given, though in a few cases no parallels could be found. Initially the technological classification and the use of the various raw materials are discussed, before a consideration of the artefact categories and their parallels.

#### CHRONOLOGY

The excavation records do not allow the establishment of a coherent site sequence for the two sites, and there is little or no stratigraphic information about the artefact assemblages. However, Armit's work (1992) has made it possible to suggest something of a relative chronology for the structures on both sites, based on Beveridge's observations. At Foshigarry he suggests a sequence of wheelhouses starting with C, followed by B and finally A, although it cannot be shown that B and C were out of use when A was built. Later reoccupation, marked by material such as composite combs (GNA 150; 151; illus 14, nos 1–2), partially destroyed B and C (Armit 1992, 54). At Bac Mhic Connain the earliest surviving structure is D, although there is an earlier midden below it. Extensive reconstruction shows that it was used over a considerable period, including at a late stage some metalworking around a furnace dug into the centre, perhaps in the 1st–2nd centuries AD (Armit 1992, 57).

Armit (1991; 1992) has argued that a change in quern type can be used as a chronological marker, with rotary querns replacing saddle querns c 200 BC. If he is correct, this implies occupation on both sites by this date. Chronologically diagnostic artefacts provide evidence of later occupation on the two sites. The mirror handle from Bac Mhic Connain is probably of 1st–2nd century AD date, while the ogam-inscribed handle from the same site and the pins and composite combs from Foshigarry indicate 7th–8th century AD occupation (Armit 1992, 57; Holder 1990; Stevenson 1955). Most of the artefacts are chronologically insensitive and could date to anywhere in this range.

#### LIMITATIONS

The identification of worked bone and antler to species and anatomical part is complicated by the modifications involved in artefact manufacture. Characteristic features often remain to enable an identification to bone type, but species can less frequently be ascertained. This is a particular problem for the identification of roe deer, sheep, and goat bones, which are similar in structure and size. No roe deer antler was found on the site, but this does not exclude the possibility that bones of roe deer could be present. However, of the three species only sheep was positively identified.

#### TECHNOLOGY

Many of the objects show clear signs of the manufacturing techniques employed, which were much the same as those used at Midhowe (Foxon 1991, 190). In addition, some of the unworked material displays butchery marks: for instance, some cattle and red deer ribs show marks from cutting and breaking which probably derive from dismembering the carcass (cf Binford 1981, 142, fig 4.42, nos 22–3).

The techniques involved in creating roughouts were: chopping with a large bladed tool;

TABLE 2  
Distribution of species and anatomical parts for the object categories from Foshigarry and Bac Mhic Connain

Object category/bone type	Sheep			Cattle				Bird		Horse Mt II
	Mp	tibia	radius	scapula	Mp	radius	femur head	ulna	tibio tarsal	
Antler picks										
Antler rings										
Awls	9	8	1							
Bone dice	1									
Cetacean bone plaques										
Composite combs										
Cetacean vertebra containers & lids										
Hafted implements										
Handles										
Implements of bone & antler (other)										
Long-handled combs										
Mirror handle										
Misc antler objects										
Misc cetacean bone objects										
Modelling tools										
Notched implements & related types										
Pendants										
Perforated bones	2									
Perforated plates										
Perforated points										
Pins										
Pinheads					1					
Points	2			1			3		1	1
Points / pins										
Polishers / hide-working tools			1		1					
Socketed femur-heads							2			
Spatulae	1	6								
Spatulate arrowheads		2								
Spindle whorls							3			
Stamp										
Tubes		1						1		
Turned objects	1	5								
Two-pronged implements										
Unworked bones	1					1				
Wedges										
Worked bones		2					1	1		
Working debris					4	1				

sawing; and splitting. The precise techniques used varied for different raw materials (see below). Wedges could be used to split the material longitudinally, and GNB 75 (antler; illus 3, no 2) and GNB 42 (cetacean bone) are probably examples of such wedges. GNA 243 (illus 3, no 1), which has longitudinal grooves along the sides and damage to the cancellous tissue at one end, may be an example of this method. Trimming the roughout to shape was generally achieved by removing slivers of bone or antler with a bladed tool. The probable antler wedge shows this clearly, with the knife-cut facets still visible at the end, and many of the large cetacean bone implements, such as the containers made from vertebrae, also bear marks of hollowing, carving and shaping by bladed metal tools.

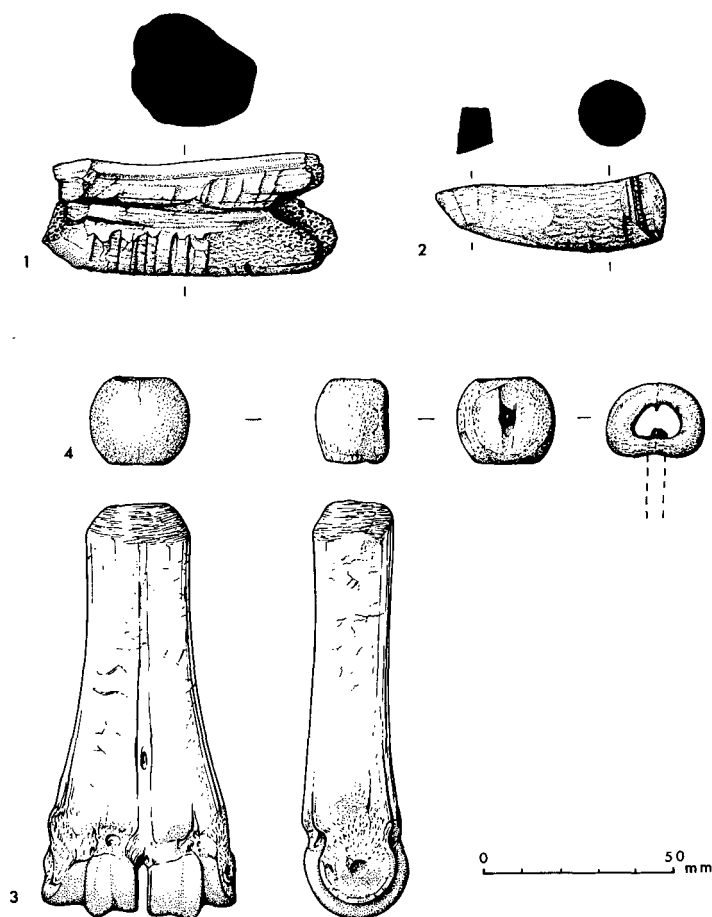
A range of other techniques was then used. Grinding was employed, perhaps using pumice, which was found at both sites (Beveridge & Callander 1931, 350); for example, some sheep tibiae

Fish vertebra	Pig fibula	Red deer ulna antler	Cattle/red deer Mp ulna rib	Unid. rib	Cetacean scapula ulna vertebra Mp/phalange humerus unid.
		2			
		9			
			1		3
		2			
					15
		9			4
		32		3	2
		14			9
		7			1
					1
		4			7
			1	1	1
				2	30
				5	2
		1			2
		1			1
		4		7	1
				8	
		1	2	6	23
1	1	1			6
					2
					1
		1			1
					1
		1			3
		4		1	
		1	1	2	
				8	
		1		2	
			1	3	
					1
					1
		22			2
					1
					8

had protruding processes ground down to a flat surface. Saws were used to make the teeth of hair combs and long-handled combs, while the hollowing out of sockets in antler may have been carried out with wedges; parts of possible antler or bone wedges are still stuck in the sockets of two tines (GNB 77; GNA 133; illus 12, nos 7 & 14). In some instances perforations were made by drilling, as on a bone knife handle (GNA 120, illus 12, no 8) and on the perforated vertebral epiphyses of cetacean bone (illus 11, nos 5–9), which have regular cylindrical holes. They could also be cut with the tip of a knife, creating an hour-glass perforation.

Decoration is limited to ring-and-dot motifs or linear grooves. For some of the ring-and-dots, a knife tip was used, as the rings are irregular, but on the composite combs (illus 14, nos 1–2) the rings are symmetrical, and must have been made with a special tool (MacGregor 1985, 60). The linear grooves on the long-handled combs (illus 14, nos 3–10) are sawn *and* knife-cut.

Some objects, such as pins and dice, have a high all-over polish, and were probably finished by polishing with pumice or leather. Many other objects are partly polished, which could be either a deliberate finish or a result of handling during use (Foxon 1991, 191).



ILLUS 3 Technology. 1. GNA 243 (segment of antler prepared for splitting). 2. GNB 75 (antler wedge). Probable sequence of pinhead manufacture from cattle metacarpal: 3. GNB 36 (cattle metacarpal). 4. GNB 139 (pinhead). (Drawn by Marion O'Neil) Scale 1:2

#### ANTLER-WORKING

For most antler objects the tines were cut or sawn off, laying bare the beam, which was then sawn into segments of the required length. Some parts were normally discarded, such as the three top terminal tines (GNA 128) and beam-tine junction segments (GNA 145–6). The necessary length was defined either by a series of cuts or a sawn groove round the circumference, and then detached by snapping (cf MacGregor 1985, 55). The saw-marks show that the material was rotated periodically to ensure the blade was never too deeply embedded. A similar technique was recognized at Midhowe (Foxon 1991, 189). The sawn-off tines were mostly discarded or were provided with round, square, or sub-rectangular sockets and used as handles.

A few antler-working blanks survive. Two illustrate the process of making a rectangular plaque, perhaps for a perforated mount: GNB 44 is a longitudinally sawn, flat rectangular plate; GNA 244 is another example at an earlier stage in the process, as it has not been trimmed along the edges.



## CETACEAN BONE-WORKING

Possible blanks for implements were found on both sites, comprising cubical carpal bones (GNB 46–7; 147–8) and two metacarpals or phalanges (GNB 153; 155). These all have marks of shaping along with polish from manufacture (or possibly wear). However, no finished objects corresponding to these blanks were identified. Two other bones (GNB 48; 138), cut to a rectangular shape and smaller than the above examples, may also be blanks. They are highly polished, and may derive from carpal bones. Similar objects from Sollas were also interpreted as blanks, although here again the implements from the site were made from completely different bones in a different way (Foxon 1991, 230). Alternatively, such objects may have been sawn in order to use the fats within the bone as fuel in fires. A possible example of this is GNB 114, a rectangular piece of unidentified bone, consisting of mostly cancellous tissue which is stained black, probably from fire. However, the degree of polish on the two rectangles from Bac Mhic Connain suggests they were not meant for this purpose.

## BONE-WORKING

It is possible to detect in the bone material successive stages in the manufacture of some implements. GNB 22–3 and 36–7 are sawn-off segments of diaphysis from cattle metapodials, and may have been blanks for objects such as parallelepiped dice. GNB 36 (illus 3, no 3) has had one end of the diaphysis shaped by rounding and smoothing into an unfinished pinhead of the same kind as the pinhead, GNB 139 (illus 3, no 4), discussed elsewhere. GNA 417 is a distal cattle radius with two deep saw-marks c 30 mm apart, showing how the bone was meant to be sawn into segments. The bone has been damaged by flaking on the side between the two saw-marks, which was probably why it was discarded.

Although some naturally pointed splinters have slight polish at the pointed ends, they are probably debris from bone splitting rather than piercing tools, since the ends are flat (GNA 39; 41; 53). Several were incorrectly described as tools in the original publication, eg GNA 26 (Beveridge & Callander 1931, 333, fig 14, no 3) and GNA 184 (Beveridge & Callander 1931, 339, fig 22, no 10); in the latter case the ‘spatulate end’ is the natural end of a cattle metatarsal.

## THE USE OF THE VARIOUS RAW MATERIALS

### ANTLER

Antler acts as an excellent shock-absorber for chopping and cutting tools; the combination of compact and cancellous tissue in antler would be far more resilient than bone, which tends to be more brittle. Antler combs are cut in the long axis rather than across the grain as the dry material is much stronger in the long axis (MacGregor 1985, 28). Appreciation of these properties is seen, for example, in the preferential use of antler for combs.

The material available for this study does not suggest that red deer were hunted for their meat, but rather that they were valuable as a source of antler. The small and biased sample makes it difficult to assess whether shed or butchered antlers were preferred. There were six burrs of shed antler in total from the two sites, while another burr with the pedicle present and part of a skull bone with cut-marks show that antler was also butchered from dead animals. Two of the antlers were from young animals, as shown by the lack of the bez tines (a tine situated above the brow tine), usually present in stags over three years of age (Clutton-Brock 1984, pl 8), and by the circumferences of the burrs (110–115 mm). It is known that Scottish red deer have

declined in size during the Holocene due to the changing environment, and modern red deer in Scotland are smaller than those in England (Clutton-Brock 1984, 20). However, the circumferences of the two other intact burrs (180 mm and 145 mm), although below the mean, are within the range of those from adult deer at Grimes Graves and Durrington Walls (*ibid*, fig 5).

It seems that antler-working at the two sites was not a large-scale activity. Production concentrated on utilitarian objects, particularly socketed handles.

#### CETACEAN BONE

Cetacean bone, derived from whales and related marine mammals, was widely utilized in Atlantic Scotland to produce implements which are either not represented elsewhere or which occur in other materials (MacGregor 1985, 31). For example, antler was the normal material for the manufacture of long-handled combs, but in the north and west cetacean bone was occasionally substituted, as in an example from Foshigarry (GNA 4, illus 14, no 3). A mirror handle (GNB 61, illus 15) has parallels elsewhere in bronze, and a range of objects was found on the two sites in both cetacean and other raw materials: see Table 2. Like antler, cetacean bone has highly desirable properties of resilience and strength.

#### *Exploitation of whale*

While there is no doubt that whale bone was used by the inhabitants of Foshigarry and Bac Mhic Connain, it is almost impossible to identify the species involved. This is mainly because each artefact represents only a small part of a bone, with little or no natural surface on which a diagnostic feature may be recognized. Even where size and shape are clear, with vertebral epiphyses, they could easily be assigned to any of several species of that particular size. Almost any species of whale, with the exception of the Arctic whales, could have been stranded along the coast of North Uist during the Iron Age. Records of stranded whales on the British Isles have been maintained since 1913 and, within certain limits, they form a useful guide to the numbers of stranded whales available in prehistory (Clark 1947, 89).

Analysis of the 407 strandings recorded on the coasts of Britain between 1913–26 shows that 17 different species of whale were stranded, the majority being Common Porpoise (Harmer, quoted in Clark 1947, 89). Recent records from the Western Isles show that 56 whales were stranded between 1988 and early 1993, the majority of which were True Dolphins (information from Scottish Natural Heritage). A few examples of a toothed species, Sowerby's whale, which is rare in the Atlantic Ocean (J Herman, pers comm), were also represented in the records. Clark (1947, 85) reviews what is known about the hunting of the main whale species in European waters during historical times and shows that several species can be ruled out as possible quarries for prehistoric man because of their speed and large size. On the other hand, Porpoises, Pilot Whales, other Dolphins, and Biscay Right Whales have been hunted during historical times by quite primitive methods.

Only one species of whale could be positively identified; a cervical vertebra (GNB 59, illus 11, no 8) was found to belong to a Cuvier's beaked whale (*Ziphius cavirostris*), which is a rare species (identification by J Herman, NMS Natural History Dept). Finlay (1984, 48, 51 & 239) identified bones of both large and small whales from the Iron Age layers at Northton, Harris, and at Sollas, North Uist.

It is unclear to what extent whales were actively hunted before the Arctic-based industry

developed in the 17th century. MacGregor (1974, 106) believed that an ample supply of raw material *beyond* that afforded by casual strandings would have been a prerequisite for the development of certain standardized types of cetacean bone tools in the late Iron Age of northern Scotland. Only nine strandings of whale in Orkney were recorded from 1913 to 1974, and MacGregor argues for the idea of active whaling in boats. Sjøvold (1971, 1203) came to the same conclusion from the manufacture of cetacean bone implements during the seventh to 10th centuries in Norway. He suggests absence of earlier finds of the same kind indicates that whaling did not begin until about the sixth century, but he stresses the unsatisfactory nature of the earlier negative evidence.

These assumptions about active whale hunting as a prerequisite for the manufacture and development of standardized types of cetacean bone tools seem to ignore the time-span of sites. The Scottish sites may have been occupied over several hundred years; given the amount of bone in a whale, the number of whales represented begins to look less impressive, although stranded whales may well have been shared between neighbouring sites. A whale carcass would have been an important resource for a small island community which could make use of every part for building, oil, fuel, etc. As mentioned above, it is most likely that if any whales were hunted it would be the small species, such as the True Dolphins. The cetacean bones identified at Sollas, Northton, and Bac Mhic Connain show that there was a mixture of large and small whales, which could argue against deliberate hunting.

In summary, although it is not possible to determine how much cetacean bone was used at the sites, consideration of the time-span of several centuries (see chronology section), the number of objects found, the frequency of strandings recorded in modern times, and the mixture of large and small species represented, makes it seem unlikely that active hunting was carried out.

#### BONES OF LAND MAMMALS, BIRDS AND FISH

Bones from sheep and cattle, and a few from red deer, bird, pig, and horse, were identified among the wide range of manufactured implements found at both sites. No distinction could be made between roe deer, sheep and goat, for the reasons outlined above. The bone objects are generally smaller than those in other raw materials. Some of the object categories have parallels in other materials, and all are common finds from Iron Age wheelhouses and brochs in Scotland.

Sheep tibiae, followed by sheep metapodials, were the most frequently used bones at the two sites, particularly for the manufacture of awls and spatulae. Several were from immature animals, which may indicate that sheep were slaughtered young, a pattern found by Noddle (1977, 208) on the Pictish and Viking-age farmsteads at Buckquoy, Orkney, where she suggested they were kept primarily for their meat and hides rather than for wool production.

There were fewer cattle than sheep bones surviving from the two sites. The most frequent cattle bones used at Foshigarry were the ulnae and ribs, for the manufacture of points, while at Bac Mhic Connain it was the metapodials. Only four bones were suitable for measuring; they correspond in general to cattle from the pre-Norse layers at Buckquoy (Noddle 1977, 206) and Sollas (Finlay 1984, 215).

Few bones of red deer were found, while horse and pig were represented only by single examples, both from Bac Mhic Connain, of naturally pointed bones which had been worked into piercing tools. Tools made from two bird bones (crane and gull), and from a single fish vertebra, were also present.

*Unworked bone*

The few surviving unworked bones from Foshigarry consist mainly of ribs of cattle and red deer (GNA 190; 418; 420–5), some with butchery marks (see above), and hacked-off segments of longbones (GNA 122; 416; 419; 426): one (GNA 122), a sheep metatarsal, was originally published as an antler handle (Beveridge & Callander 1931, 337, fig 20, no 11). At Bac Mhic Connain a complete unworked fish vertebra was found (GNB 58), identified by Platt (1948) as a Tunny (*Thunnus thynnus* L), a large oceanic fish c 2.45 m long which migrates northward around the British Isles (Nicholls & Miller 1986, 72).

## ARTEFACT CATEGORIES

For this study the artefacts were divided into the categories discussed below: full details of each object can be found in their catalogue entries (NMS archive). With such diverse material it is inevitable that some groups will be coherent entities (eg composite combs), while others will gather together a variety of functional types (eg various handle types). It was considered desirable to use these larger groups and to discuss the range within them, rather than risk over-classifying such a heterogeneous assemblage.

## NOTCHED IMPLEMENTS AND RELATED TYPES

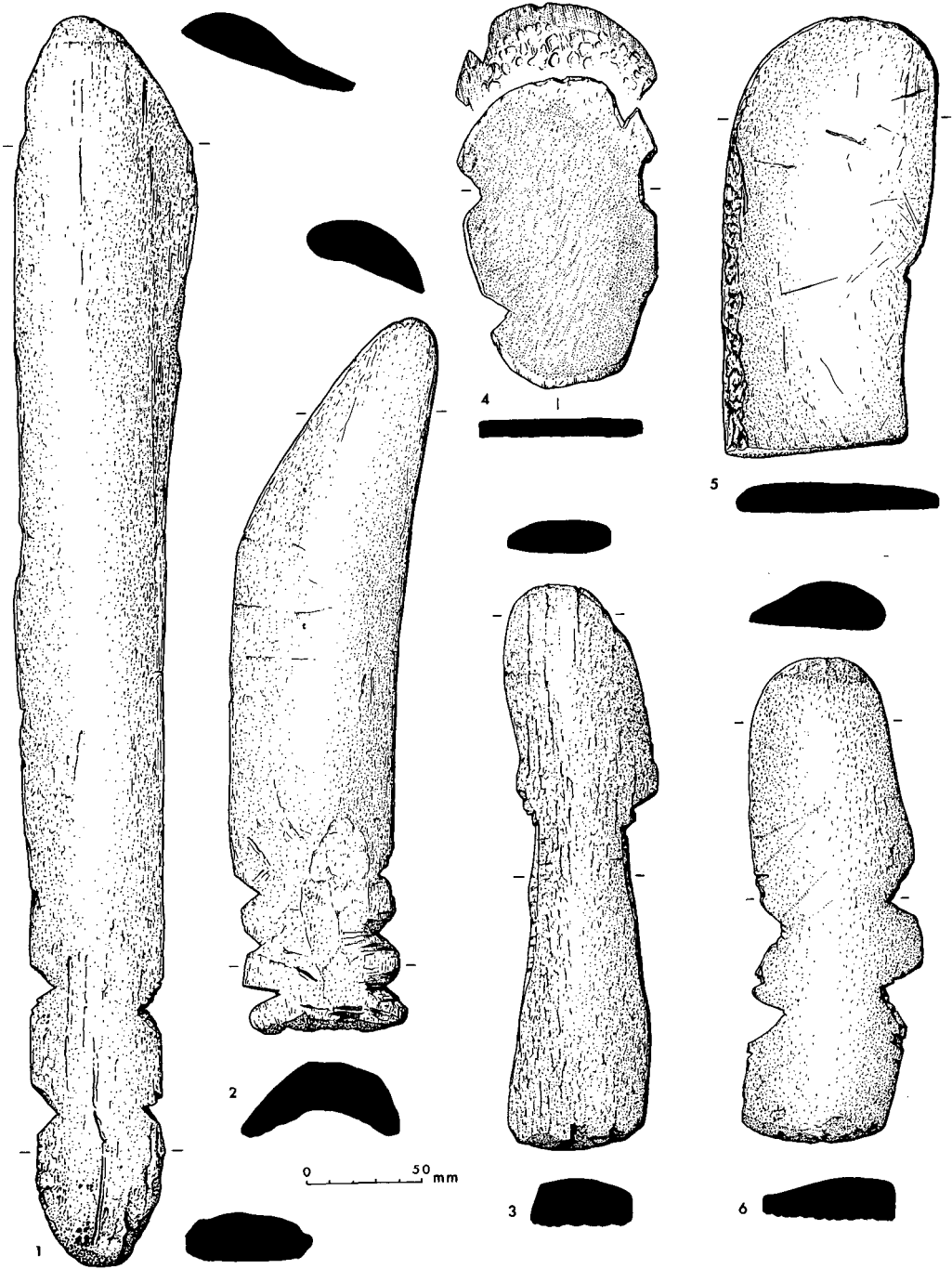
The most unusual artefacts from Foshigarry are implements made from longitudinally cut cetacean bone with a characteristic working end and, in most cases, V-shaped notches symmetrically arranged in opposing pairs close to the butt end of the implement. Over 50 examples were originally found by Beveridge, but they are almost unparalleled elsewhere.

Beveridge divided them into three classes based on their general morphology. The first group consisted of the two longest implements (GNA 197; 198, illus 4, no 1), measuring 610 mm and 540 mm respectively. Only GNA 198 has the characteristic notches. The second group consisted of five implements, of which only three were presented to the museum (GNA 199–201). They are of a fairly constant width throughout and measure 450–500 mm in length. None is notched. The extant examples of groups one and two are all made from whale ribs.

The third group is the most numerous. At least 50 examples of this group were found, many represented only by fragments; 24 more or less complete implements were given to the Museum, and these measure 133–325 mm in length (eg GNA 202; 216; 222; illus 4, nos 2 & 5–6). All but one (GNA 222) are notched. Although some of the implements seem to derive from whale ribs, not all could be identified due to a lack of remaining characteristic features.

*Description of the main features of the implements*

The main features that define this group of implements are the characteristic notches and the working end. Not all of the implements have both features but all have one or the other. The working end can generally be described as rounded and bevelled, with the bevel appearing most frequently on the cancellous face of the bone. One implement (GNA 220, illus 4, no 4) is bevelled at each end, one bevel formed on the cancellous face and the other on the compact bone, which implies either a dual-purpose implement or successive use of the two ends. On the majority of the implements, high polish and striations from wear extend on average 50 mm from the rounded end on the compact face and are restricted to the bevel on the cancellous face. Several of the implements are abraded towards one side.



ILLUS 4 Notched implements and related types. 1. GNA 198; 2. GNA 202; 3. GNB 52; 4. GNA 220; 5. GNA 222; 6. GNA 216 (all of cetacean bone). (Drawn by Marion O'Neil) Scale 1:3

The majority of the extant implements have the characteristic V-shaped notches cut roughly into the bone, showing rough tool-marks but no smoothing from wear. One implement is different in having U-shaped notches (GNA 196). Fourteen of the implements have four notches, and four have six, symmetrically arranged in opposing pairs. In two cases there is a marked deviation from this arrangement in precisely opposite pairs. One implement has three notches, five are without notches, and the rest have one or two V-shaped notches remaining on one side only due to damage. The notches, with only three exceptions, are positioned close to the butt end. GNA 220 has a pair of notches at each end.

One other implement (GNA 232, illus 13, no 1) should be mentioned in association with these objects. It is triangular in shape, made from a longitudinally cut bone with a knife-cut perforation near the apex. The broad base opposite the apex displays the same wear pattern as the implements discussed above. The perforation may have been used for fastening a handle with a rivet.

### *On-site distribution*

The objects were concentrated in the three large wheelhouse structures A, B and C, at Foshigarry (illus 2A; Beveridge & Callander 1931). The majority were above the floor in B, but one specimen, along with part of an antler, two bones, and a quantity of limpet shells, was found inside a large clay pot which stood inverted, its mouth resting upon the floor and closed by a layer of clay and small pebbles (*ibid*, 310). Six of the longer implements, belonging to Beveridge's first and second class, were found in a stone slab sink in structure B, under a large slab, with five side by side and the sixth across the top (*ibid*, 306; illus 2A, no 2). These more unusual contexts may suggest some form of votive deposit (F Hunter, pers comm).

### *Comparisons with implements on other sites*

These implements are remarkably abundant at Foshigarry compared with neighbouring sites. The closest parallel at Bac Mhic Connain is a single implement (GNB 52, illus 4, no 3) with the characteristically rounded working end, which is striated by wear-marks and constricted close to this end by one notch on each side of the implement. The notches do not have the characteristic V-shape and display polish from wear which probably derives from handling the implement in use, as there are no wear-marks between the notches to suggest an attachment device for a handle. There is a single example from Berneray, Harris, with the characteristic notches (Crawford 1967, 88). Three implements from the Broch of Burrian are claimed to resemble those from Foshigarry but they lack the opposing notches (although one has two V-shaped notches on one side), and they are pierced with central shaft-holes (MacGregor 1974, 86, fig 15, nos 199–201). Large flat blades of cetacean bone with a working end similar to the Foshigarry examples were also found at Howmae, North Ronaldsay (eg NMS GO 69).

### *Interpretations of the implements*

Various explanations have been advanced for these implements (see also Clarke 1971, esp fig 7). Callander suggested that with the hard cancellous tissue they would have made good rasps for preparing skins for clothing (Beveridge & Callander 1931, 351). He suggested the notches were for attaching a wooden handle. For the long specimens found in the sink in structure B he suggested a use as weapons. Clark (1947, 97) compared them to similar objects used by Eskimos

of northern Canada as blubber mattocks. In publishing the Berneray example, Crawford (1967) drew attention to its similarity to the Foshigarry specimens and interpreted them as the blades of peat-spades because some were abraded towards one side at the working end. Rees (1979, 40) distinguished three implements from Beveridge's third group (GNA 202, *illus* 4, no 2; GNA 203–4) as possible plough shares, on the grounds that they have a pointed rather than a flat working end, abraded towards one side, which is probably the result both of wear and manufacture, and because they display longitudinal wear-marks stretching 120–140 mm from the working end, similar to those on stone ard-points. According to Rees, the fine and even wear-marks on these rather frail implements could result from ploughing the light sandy soil found around Foshigarry. As for the implements with a flat working end, Rees (1979, 320) agreed with the blubber-mattock interpretation, as the wear patterns show that the implements were pushed through a substance at an angle. Rees's interpretations are the most plausible to date.

Callander did not believe that the notches were made to improve the grip, since they are uncomfortable when grasped in the hand and some are rather broad to be gripped with ease (Beveridge & Callander 1931, 351). The fact that a few implements are unnotched but have a similar working end to the notched examples strengthens this argument. The suggestion that the notches were meant for the attachment of a wooden handle may be possible, but neither the notches nor the surfaces between them display wear-marks or smoothing as a result of any attachment, although the position of the majority of the notches at the butt end favours this idea.

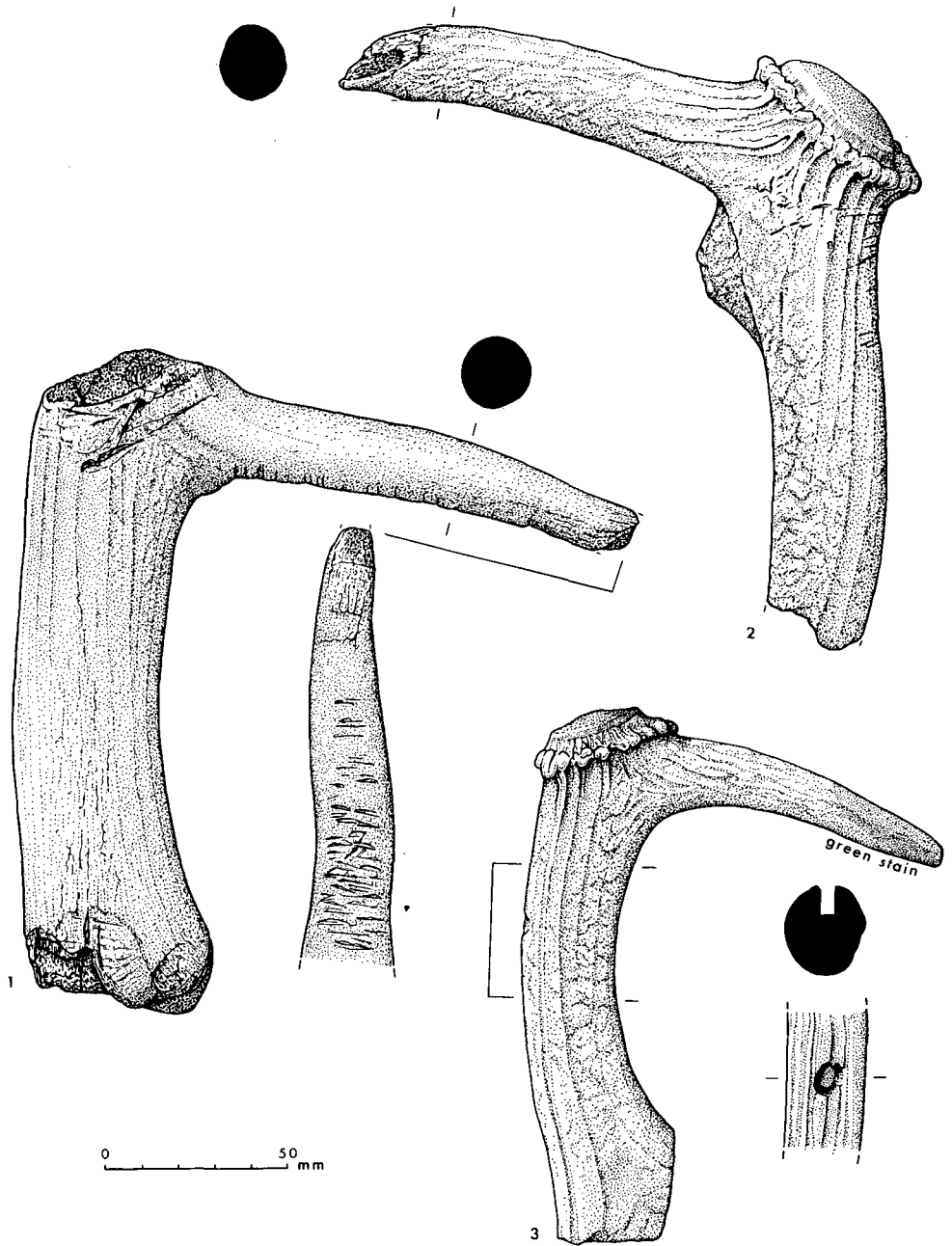
Two objects (GNA 88–9) with sawn notches on one side are morphologically (and probably functionally) different from the category discussed above. They are of sub-rectangular shape with two flat faces; the lateral edges taper to a rounded end, which is slightly polished. They are paralleled by a similar implement with a chisel-end from Sollas, North Uist, interpreted as a wedge, with a series of transverse saw-cuts dividing the object into four blocks (Campbell 1991, 158, *illus* 20, 661).

#### ANTLER PICKS

Three implements from Foshigarry (GNA 124–6) and one from Bac Mhic Connain (GNB 55) were described as antler picks by Beveridge & Callander (1931, 338; 1932, 60), but only two (GNA 124; 125; *illus* 5, nos 1–2) have wear-marks consistent with this, ie flattening and flaking of the brow tine. GNB 55 (*illus* 5, no 3) is morphologically similar but is not a pick; the tip of the tine lacks the characteristic wear, and is stained green (shown by analysis to derive from copper: Appendix); the beam is highly polished on one side, probably due to holding, and a small hole is pierced part-way through the beam. The precise use is unclear, but the copper stains suggest an association with metalworking. Another object (GNA 131) resembles a pick head, but the brow tine is polished and carved into a wedge shape. GNA 126, on the other hand, is natural; the smoothed tine tip results from rubbing while borne by the stag. This picture is similar to Midhowe, where only two of the nine supposed antler picks can be substantiated (Callander & Grant 1934, 495; Foxon 1991, 203).

To produce antler picks, the burr and brow tine of the shed antler were retained and the beam was chopped off from the rest of the antler at some distance from the burr; the brow- or the bez tine was left and was used as the digging end (Clutton-Brock 1984, 26).

Variants of this long-lived implement type (Clutton-Brock 1984) are reported from several other Atlantic Iron Age sites, eg Kilpheder and Galson (Lethbridge 1952, 187; Edwards 1924, *fig* 9, nos 27–8), although in most cases they are less robust and have shorter hafts than Neolithic examples.



ILLUS 5 Antler picks and related types. 1. GNA 124; 2. GNA 125; 3. GNB 55. (Drawn by Marion O'Neil) Scale 1:2



## AWLS, SPATULAE AND SPATULATE ARROWHEADS

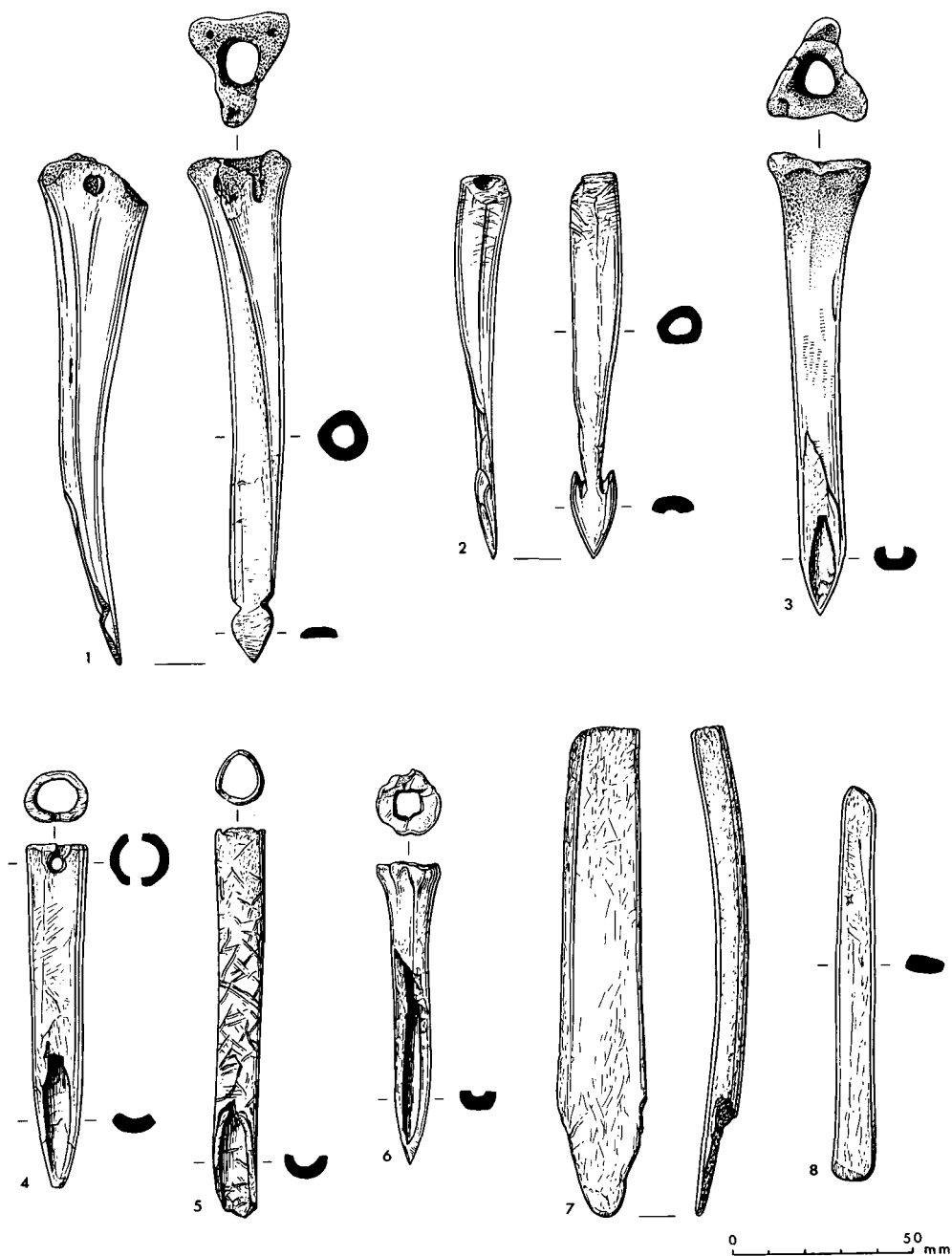
There is a large number of implements made of sheep bones split approximately mid-shaft, with the length of attached diaphysis ground either to a sharp point, a flat, rounded spatulate end, or an 'arrowhead' (eg *illus 6*, nos 1–6). These three groups are termed awls, spatulae and spatulate arrowheads (following Foxon 1991, 151, 195 for the first two), although these are descriptive rather than functional terms: in this case 'awl' does not denote any specific use other than a general piercing function. Most display polish from wear. The awls differ from the points (below) both in raw material – sheep metapodials and tibiae – and in method of manufacture. Similar objects have been found from the wheelhouse period at Clickhimin (Hamilton 1968, fig 60, no 2) and from the Broch of Gurness (Hedges 1987, 205f, nos 147–52). The two spatulate arrowheads (GNB 14; GNA 37; *illus 6*, nos 1–2) were shaped like spatulae before being carved into an arrowhead shape. GNB 14 is less well finished, as the arrowhead has only a notch at either side rather than fully developed undercut barbs. These implements are unparalleled. There are two unusual spatulae (GNB 20, *illus 6*, no 5; GNB 78) which have no wear-polish at the working end; GNB 78 has a green copper-based stain on its posterior side, while the diaphysis of GNB 20 bears shallow cut-marks, which appear to be an unfinished interlace pattern, implying use as a trial piece (R M Spearman, pers comm).

Study of the bones used and the articulation retained for these implements indicates that the proximal end was retained more frequently than the distal end, which differs from the pattern at Gurness, Clickhimin, and Midhowe (see references above). Similar implements from the Broch of Burrian, classified there as gouges, had either the proximal unfused end or the distal articulations retained. These differences may relate to different slaughtering patterns at the various sites (the proximal end fuses before birth while the distal fuses later), although the general lack of faunal remains makes this difficult to assess.

Further differences derive from the method of mounting. Eleven of these implements were perforated longitudinally through the unfused proximal end to form a socket connecting to the medullary cavity; others have had the proximal articulation cut off to expose the natural medullary cavity; some have the articulation unmodified or only partially removed. The perforated examples are likely to have been hafted, those with the medullary cavity exposed could have been and those with a largely intact articulation were not. Awls and spatulae are found in each of these categories, while both 'arrowheads' could have been mounted. Two perforated examples also have rivet-holes through or below the proximal end (GNB 14; GNB 15; *illus 6*, nos 1 & 4); on GNB 15 (spatula) there are traces of iron oxide, which strongly suggests the hole allowed an iron rivet to secure the object more firmly to a haft. This is confirmed by the Glastonbury evidence, where some wooden hafts survived in place, and implements of Glastonbury type C, with rivet holes at the socketed end, had rivets securing the haft (Bulleid & Gray 1917, 420).

Considering further the varieties that may have been hafted, parallels can be quoted from Scottish sites, eg Borneess Cave, Kirkcudbrightshire (NMS HL 123–8, 130), Burrian, Orkney (MacGregor 1974, 78), and Howmae, North Ronaldsay (NMS GO 44–5). There are also many comparanda from English Iron Age sites, eg Maiden Castle, Dorset (Wheeler 1943, 303); Gussage All Saints, Dorset (Wainwright 1979, 113); Glastonbury Lake Village, Somerset (Bulleid & Gray 1917, 419); and All Cannings Cross, Wiltshire (Cunnington 1923, 82–91). On all these sites, sheep bones were the dominant raw material, although other species were sometimes used. Chronological patterning has been identified in these southern English types, but this should not be projected uncritically onto the Scottish material.

The function of these socketed implements has been much debated, with interpretations ranging from spear- or lance-heads (Cunnington 1923) to weft-beaters (Crowfoot 1945, 157),



ILLUS 6 Awls, spatulae and spatulate arrowheads. 1. GNB 14; 2. GNA 37; 3. GNA 30; 4. GNB 15; 5. GNB 20; 6. GNB 34 (all of bone). Modelling tools. 7. GNA 191; 8. GNA 181 (both of bone). (Drawn by Marion O'Neil) Scale 1:2

skinning knives (Wainwright 1979, 117), gouges, or weaving shuttles (Wheeler 1943, 303). There is actually contextual evidence for the use of the socketed 'awls'; they are found in association with iron spearheads in inhumations from East Yorkshire, where both the bone points and the iron spearheads were apparently used to spear corpses as part of the burial rite (Stead 1991, 78; 1968, 170, fig 16). From further afield, similar socketed bone objects are found in Danish Iron Age weapon deposits (Kaul 1988). It is intriguing that such bone spearheads remained in use alongside iron ones. Such a function seems likely for the socketed 'awls' and spatulate arrowheads from the two Western Isles sites, although it is slightly problematic that few have the extensive wear on the points which could be expected from such use. This still does not explain either the spatulate examples or the unhafted awls, for which a different use must be sought; use as weft-beaters is likely for some of the spatulate ones.

Although the similar choice of raw material and method of manufacture for these implements seemed at first to point to a similar function, clearly several distinct uses are represented, and morphology, wear-marks, and context must be considered in order to reach the most likely interpretation.

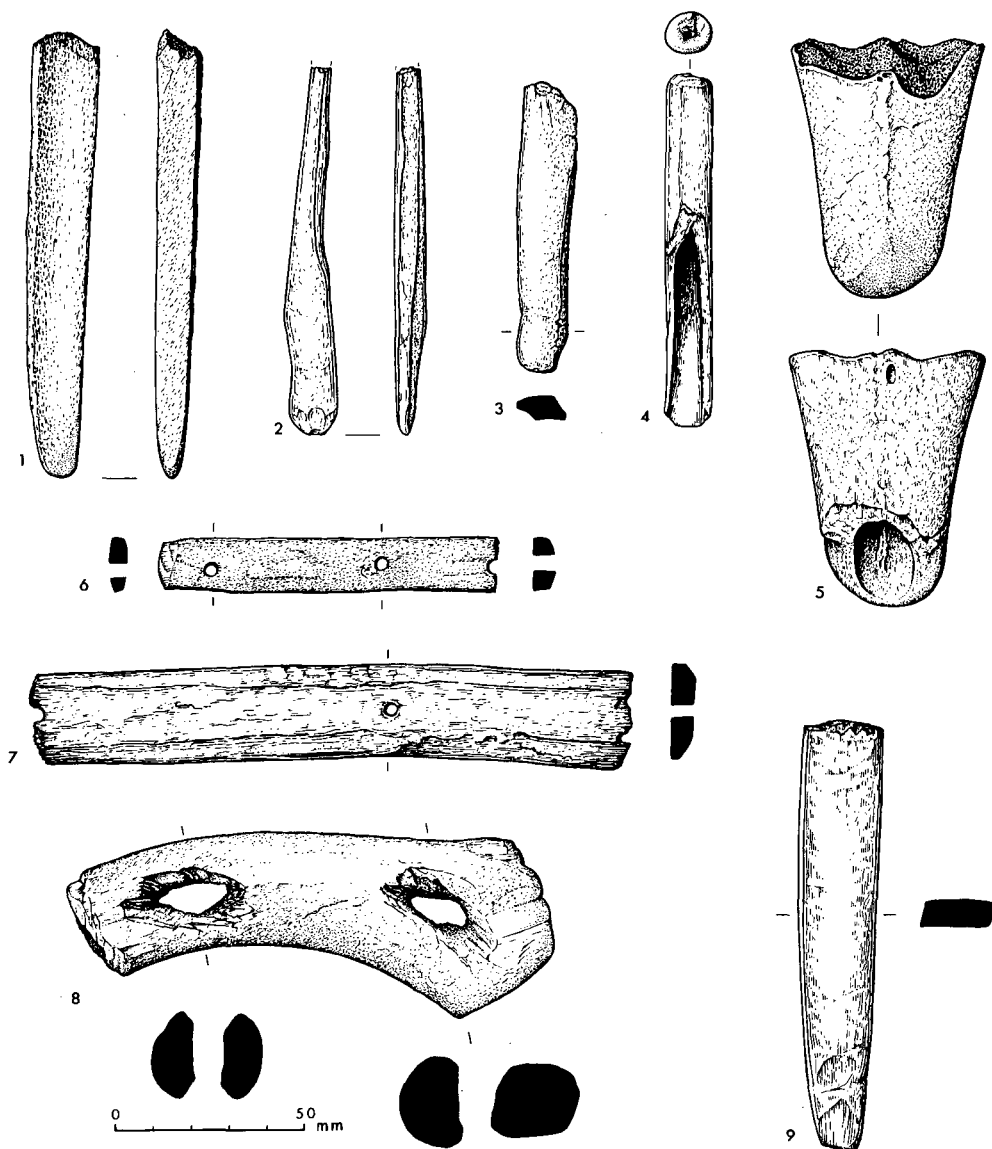
#### MODELLING TOOLS

Five bone objects (eg GNA 191; 181; illus 6, nos 7–8) had spatulate working ends but were manufactured from different bones in a different technique from the spatulae (see above); three had been used at both ends (GNA 181, 437; GNB 40). GNA 181 is a particularly fine specimen, trimmed down to only c 4 mm in thickness, with a high polish all over; each end is spatulate and cut obliquely. Similar implements were found in metallurgical deposits at Gussage All Saints, Dorset (Wainwright 1979, 131, fig 98:4), and were interpreted as modelling tools for fashioning wax patterns in lost-wax bronze casting. There is evidence of bronze-working at Foshigarra and at Bac Mhic Connain (Beveridge & Callander 1931, 326, 342), and a similar function seems possible. Interestingly, a crucible found in a probable furnace in structure D at Bac Mhic Connain contained bronze slag and worked bone/antler (Beveridge & Callander 1932, 48): most of these can no longer be identified, but the unusual spatula with copper-derived staining, GNB 78 (see above), is known to have come from this chamber, and hence may have had a metallurgical function.

It has also been suggested that this type of object was used for smoothing and decorating pottery, and this too is a possible function for the above examples. Similar objects, in bone and antler were found at Sollas (Campbell 1991, 158, illus 19, no 628; illus 21, no 629; fiche illus 68, no 627).

#### POLISHERS/HIDE-WORKING TOOLS

Three objects are probably polishers or burnishers used in leather working. The distal part of a cattle metacarpal (GNA 187, illus 7, no 5) has been modified to form an obliquely sloping curved working surface. It has a high polish all over, particularly on both sides of the working edge. GNA 118 (illus 7, no 4) is a sheep tibia with the articulations cut off at both ends, which were then rounded and smoothed. It is split from one end to mid-shaft on the diaphysis, probably accidentally as the edges are sharp. GNA 81 (illus 7, no 1), of cetacean bone, is rectangular in section and three faces have a high polish. The working end is bifacially bevelled from the opposing broader faces and is abraded towards one side. The unpolished face suggests it was originally part of a larger object.



ILLUS 7 Polishers/hide-working tools. 1. GNA 81 (cetacean bone); 2. GNA 74; 3. GNA 183; 4. GNA 118; 5. GNA 187 (all of bone). Perforated plates. 6. GNA 195 (antler); 7. GNA 194 (cetacean bone). Miscellaneous antler object. 8. GNB 21. Miscellaneous cetacean bone object. 9. GNA 82. (Drawn by Marion O'Neil) Scale 1:2

Two other objects (GNA 74; 183; illus 7, nos 2–3) are made from longitudinally split longbones with one end bevelled, rounded, and polished. The former implement tapers towards the other end, where it has been deliberately rounded and smoothed, probably from handling/holding (a handle?), while the latter is broken at the other end. There are some similarities between these implements and bevelled tools found in considerable numbers on Mesolithic sites in Scotland, eg around Oban (Lacaille 1954) and on Risga (Foxon 1991, 108). However, the bevel angle of both GNA 74 & 183 is not as acute as on those from the former sites. Most of those from Risga were made from red deer metapodials and were most probably used for the treatment of hide (Foxon 1991, 110), as is suggested for the bone and antler examples from elsewhere (Lacaille 1954, 200).

The high polish and the shapes of the working ends of these implements distinguish them from, for example, the implements with a spatulate end, which probably had a different function.

#### HAFTED IMPLEMENTS

Several antler objects were perforated or socketed for hafting. Their specific functions are normally unclear, but a range of uses is represented. GNB 53 (illus 8, no 5) may have been a mallet. It is a beam segment with the end (the sawn-off base of the brow-tine) highly polished, and the other end socketed, connecting with a deep notch on one side. It was originally thought to be a whistle (Beveridge & Callander 1932, 56), which it certainly is not.

It is much harder to ascribe a function to the other objects in this category. There is a fairly coherent group of five objects, all roughly cuboidal in shape and made from longitudinally cut antler or cetacean bone, with an approximately central sub-circular perforation (GNA 1, illus 8, no 7; GNA 2–3; GNB 1, 150; illus 8, nos 6 & 1). One broken example (GNB 150) was originally interpreted as a hammer-head (Beveridge & Callander 1932, 50), but does not display any surface crushing to confirm this, although it does have high polish close to the remaining end; a second example has similar polish (GNB 1), while the other three have indeterminate wear-marks at the ends. A similar object from Midhowe was interpreted by Foxon (1991, 198) as the cross-guard of a dagger or part of some other type of composite mounting, although this would not explain the wear-marks seen on the above examples.

Another coherent group is formed by three beam segments perforated at right angles close to one end (GNA 77–78; 79, illus 8, no 2). Two (GNA 78–9) have a flaked end opposite the perforated end, while GNA 77 has been sawn off at both ends, creating sharp unworn edges. Beveridge & Callander (1931, 353) suggested they resembled North American implements for straightening the shafts of arrows.

Three objects (GNA 98; 101–2, illus 8, nos 3–4), with worn burr faces and trimmed coronets lacking the brow tine, have a longitudinal socket in the attached beam segment. A parallel was found at the Broch of Gurness (Hedges 1987, fig 2.22, no 74), and a similar implement from Midhowe, with a rectangular socket and an additional perforation at right angles to the beam, has been interpreted as an adze or digging hoe, where the haft was inserted in the socket and secured via the additional perforation (Foxon 1991, 197, fig 7.6, no M34). Other similar objects from elsewhere in Britain are believed to have been hafted through the perforation at right angles to the beam and are interpreted as hammers (MacGregor 1985, 171). The Foshigarry specimens lack the additional perforation and have round rather than rectangular sockets: hence it is unclear how the haft was secured. The worn burr faces show they were undoubtedly used, but the exact function is unclear.

GNA 97 (illus 8, no 8), made from a segment of beam, has a blade-like edge at one end, oblique to the beam, which is damaged by wear. Traces of chopping marks show it was shaped by

an iron blade. The other end has a sub-rectangular socket, damaged by flaking on one side. A similar implement from Midhowe was described as a mattock by Foxon (1991, 202), for which the properties of antler are an excellent choice.

#### TWO-PRONGED IMPLEMENTS

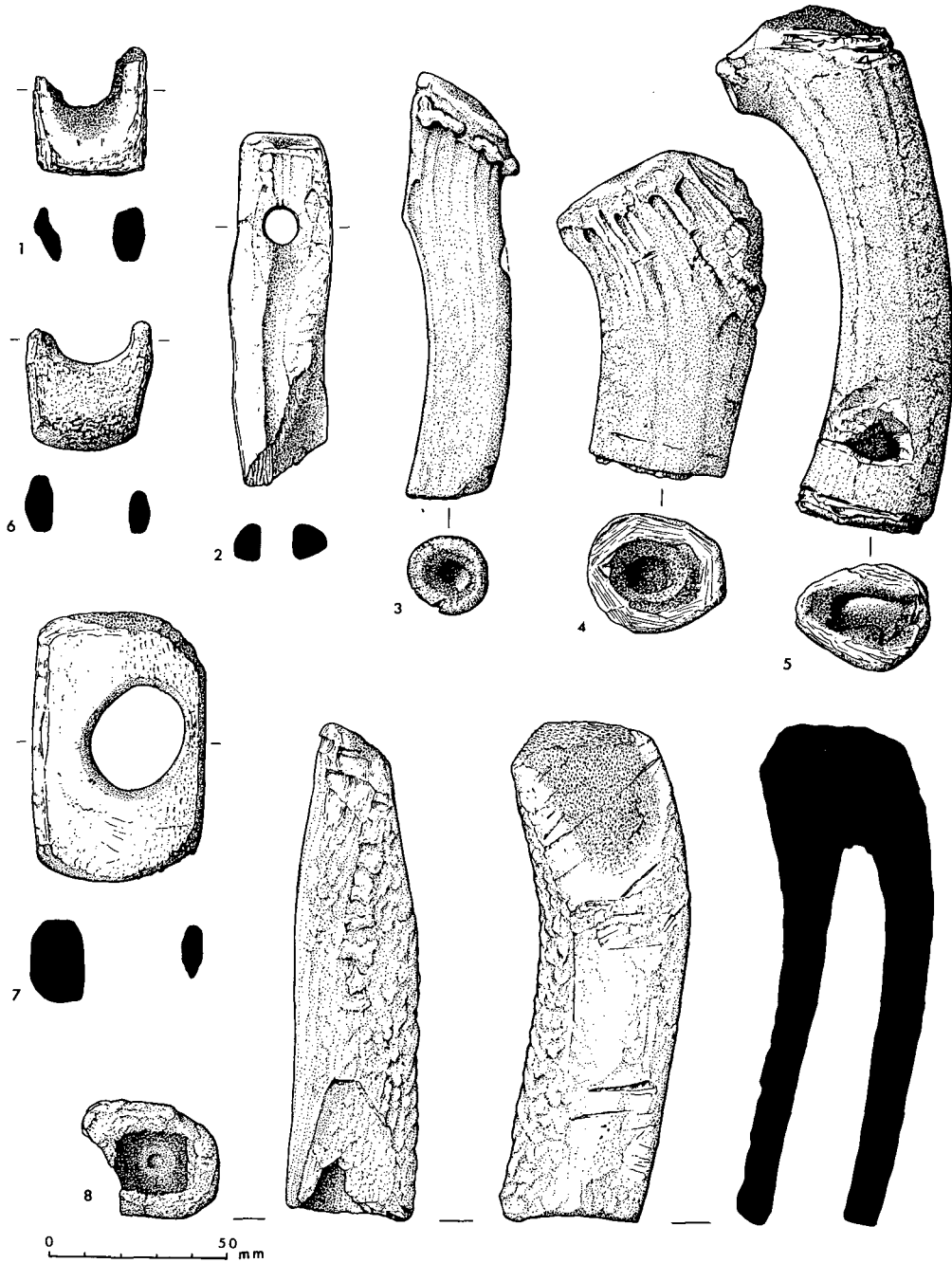
The term two-pronged implement has been coined to describe this category of implements, bifurcated at one end, sometimes with wear-marks, but of uncertain function. It comprises five implements made from longitudinally cut longbones (GNA 178–9; 186; illus 9, nos 12–14; GNB 50) and antler (GNB 39, illus 9, no 11). Of these, GNB 50 has two unworked points, which are probably accidental by-products of flaking.

Two-pronged implements occur on many sites of various periods and there have been several attempts to interpret them. One of the similar implements from Norse Jarlshof was interpreted as a device for extracting hooks from fish throats (Hamilton 1956, 122, fig 57, no 11), while a Swedish example of Viking date was believed to have been used for twining threads (Graham-Campbell 1980, 22, 208). This category includes objects of various raw materials, worked in different ways, some with two points at each end, as on an example from Braewick Loch, Eshaness, Shetland (NMS HD 562).

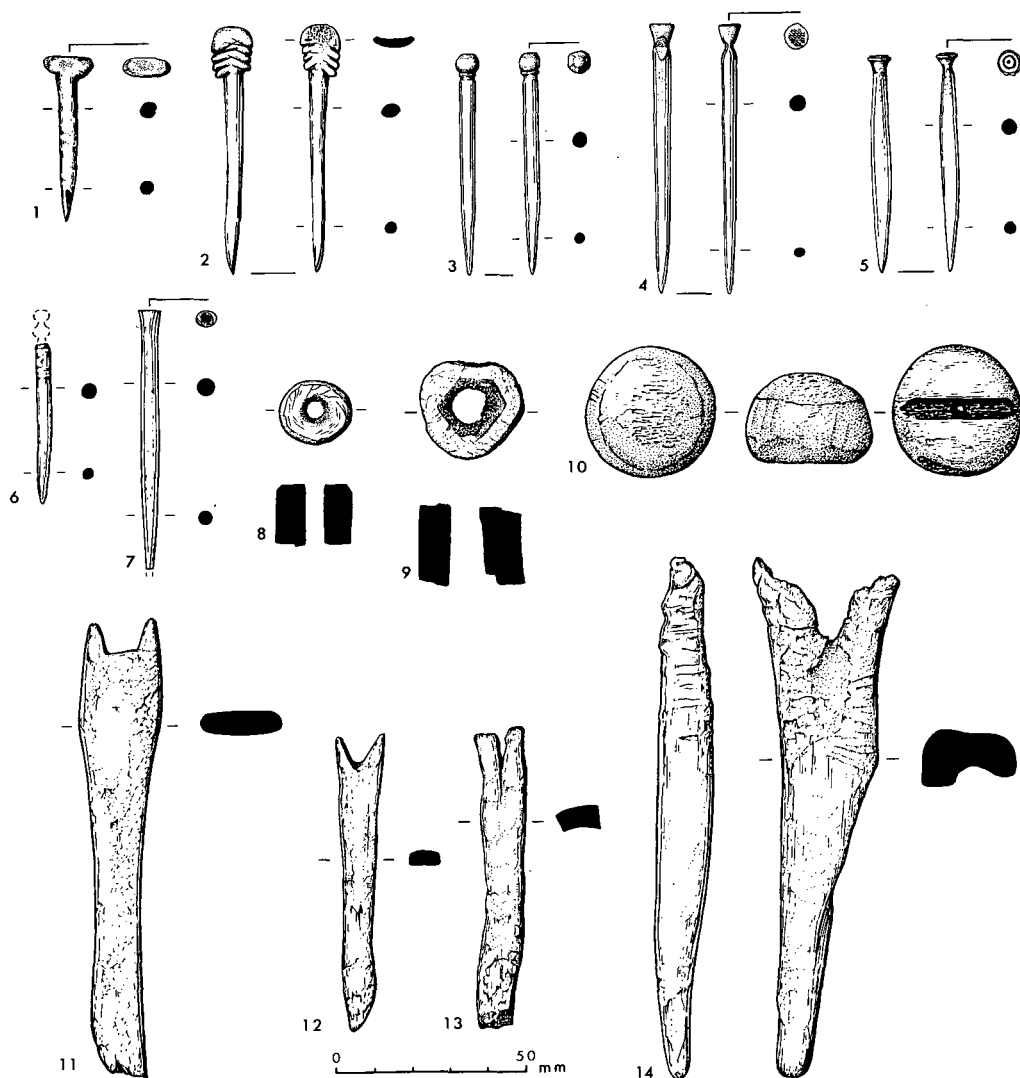
The wear-marks on each object must be studied to assess how the object was used, and even then only a possible explanation can be advanced, since similar wear-marks could have been produced by several different uses. Of the two-pronged implements from Foshigarry, GNA 186 has the most diagnostic wear-marks. Grooves run transversely across both the points and the shaft below, and it may have been used for winding thread. The opposite end tapers to a rounded end with wear-polish which may be a handle. GNA 178 and GNB 39 seem to have been used at both ends; in each, the area between the tips of the two points displays wear (different from the probable thread wear on GNA 186), while the opposite end, cut obliquely to form a working edge, is polished. GNB 39 has a waisted handle, and the tips of the points have crush-marks, perhaps from beating up the weft. It does indeed have some physical resemblance to a long-handled comb, which may support some connection with weaving. GNA 179 has square prongs; a parallel from the broch period at Clickhimin (Hamilton 1968, 114, fig 48, no 1) had binding grooves on the two points and was interpreted as a handle, whereas GNA 179 has no wear or grooves, though these could have been obscured by natural post-depositional erosion of the surfaces.

#### PINS

There are seven pins from Foshigarry and one from Bac Mhic Connain. All are bone, presumably longbones from cattle/red deer, although only two (GNA 159–60) show features to confirm this. The typology, following MacGregor (1985, 113), is based on the shank and the head. GNA 156 (illus 9, no 3) is a *spherical-headed pin* with a flat top, and GNA 158 (illus 9, no 6) is a *segment-headed pin*, now broken but originally with two segments (see Beveridge & Callander 1931, fig 19, no 3 for the complete pin). GNA 154–5 and 157 are *nail-headed pins* (illus 9, nos 4, 7 & 5). GNA 154 has a bucket-shaped head clearly distinguished from the shaft, while GNA 155 has no such clear demarcation. GNA 157 has a dot and two rings on the nail head, which expands from the shaft. These three types are readily paralleled. All are short pins of late Iron Age date; Foster's (1990) revision of Stevenson's (1955) pin chronology would suggest they belong to her LIA II (c AD 600–800), although there are grounds to suggest that some may pre-date the seventh century. The spherical-headed pin is similar to examples from Sithean a Phiobaire, South Uist (NMS GS 166) and Broch of Burrian (MacGregor 1974, fig 5, nos 1–7). Since only a photograph remains of the complete segment-headed



ILLUS 8 Hafted implements. 1. GNB 150; 2. GNA 79; 3. GNA 101; 4. GNA 102; 5. GNB 53 (all of antler); 6. GNB 1; 7. GNA 1 (both of cetacean bone); 8. GNA 97 (antler). (Drawn by Marion O'Neil) Scale 1:2



ILLUS 9 Pins (all of bone). 1. GNA 160; 2. GNA 159; 3. GNA 156; 4. GNA 154; 5. GNA 157; 6. GNA 158 (dotted lines indicate the outline of the complete pin as originally published); 7. GNA 155. Antler rings. 8. GNB 32; 9. GNB 31. Pinhead. 10. GNA 153 (cetacean bone). Two-pronged implements. 11. GNB 39 (antler); 12. GNA 178; 13. GNA 179; 14. GNA 186 (all three of bone). (Drawn by Marion O'Neil) Scale 1:2

pin, comparisons must be tentative, but it resembled Foster's group 13: bone pins with transverse grooves beneath a conical head. Similar examples are few in Scotland (Foster 1989, 74). Nail-headed pins are common throughout the whole of the Atlantic Province, in antler, bone, and metal.

There are two pins with no clear parallels, one with a chevron-patterned head (GNA 159, illus 9, no 2), the other with a T-shaped head (GNA 160, illus 9, no 1). The short shanks suggest a late Iron Age date. GNB 69 is very short compared with the other pins, only 24.5 mm in length, perhaps due to breakage or remodelling.



## PINHEADS

In addition to pins made entirely of bone, two bone *pinheads* for iron or bone pins are represented. They belong to Stevenson's 'native pins II' (1955, 292) or Foster's (1990, 155–6) 'globular heads'. GNB 139 (illus 3, no 4) is made from a cattle metacarpal, retaining the natural hollow, with a perforation on the posterior side of the bone which contains traces of an iron pin, and with a high polish all over. This type is well known from the north and west of Scotland, for example at the Broch of Burrian (MacGregor 1974, 75, fig 8, nos 114–17), Broch of Birsay (Stevenson 1955, 292, fig A, no 27), and Dùn An Fheurain, Argyll (Ritchie 1971, 103, fig 2, no 19), with examples also from Ireland and an outlier from Corbridge, Northumberland (MacGregor 1985, 121).

The other pinhead (GNA 153, illus 9, no 10) is made from cetacean bone and has a diametrical groove on the base with a small central perforation for an iron pin (iron oxide stains are visible under the microscope). This pinhead is smoothed but not highly polished. Stevenson (1955, 292) believed it was a larger imitation of globular heads of polished tooth, a variety confined to Orkney brochs.

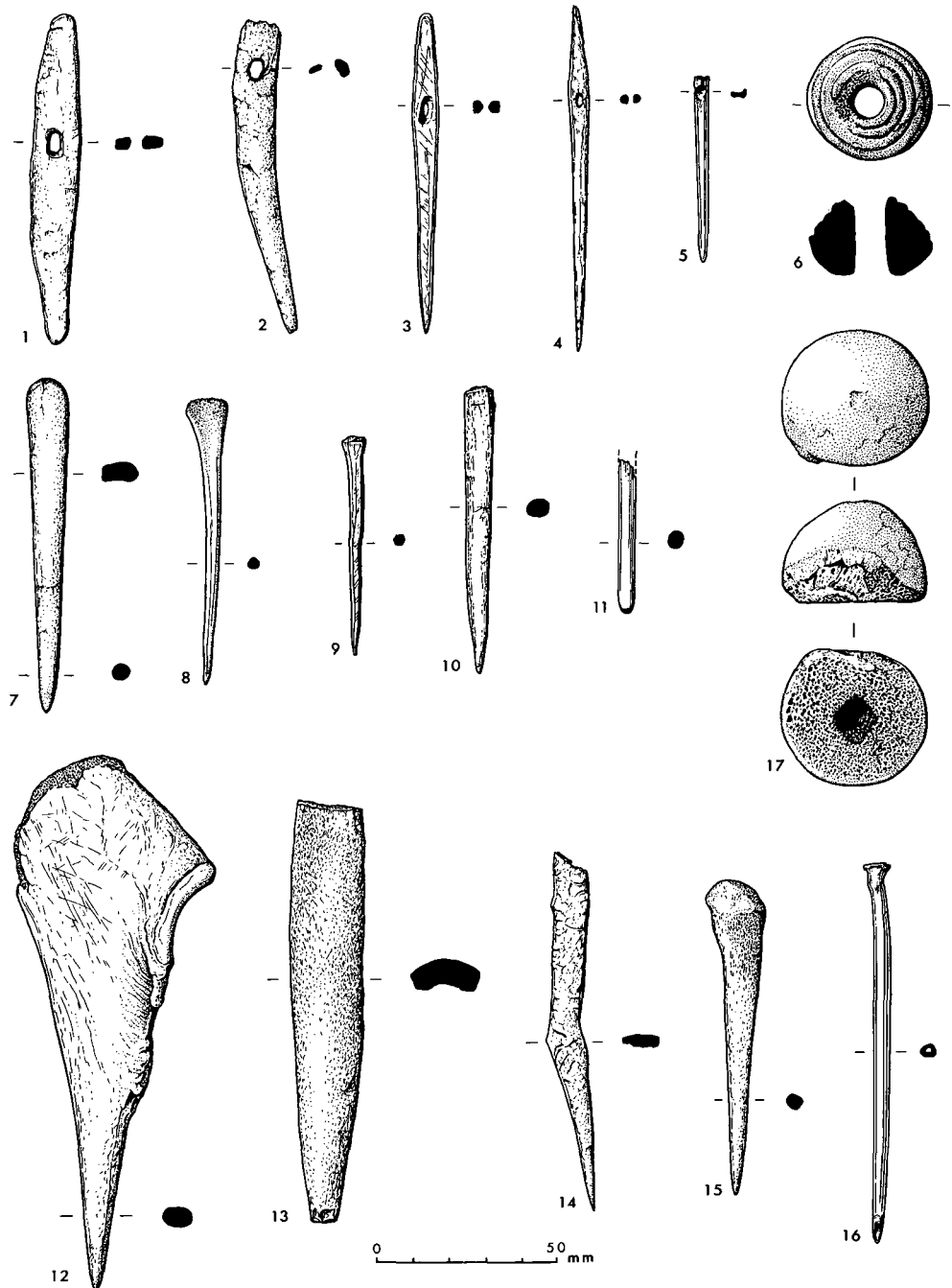
Such objects are found in Scotland in antler, bone, whale bone, tooth, and jet-like materials; most show traces of an iron shank. Apart from an example from the wheelhouse at Garrylochdrach, North Uist (Beveridge & Callander 1932, 36), the 'jet' examples are not found in the Atlantic region (Foster 1990, 155). Their generally accepted function as pinheads (Stevenson 1955, 292) was questioned by Close-Brooks (1986, 166), who suggested they are more probably pegged playing-pieces. They seem to have a wide date range within the Iron Age (Foster 1990, 155–6).

From Bac Mhic Connain comes what is probably a part-worked pinhead, indicating the technology involved. A cattle metacarpal has been rounded and smoothed to the approximate shape of a pinhead, but has not yet been separated from the distal articulation (illus 3, no 3).

## PERFORATED POINTS

Ten perforated points were found at Foshigarry (eg illus 10, nos 1–4). Nine are kite-shaped, with a deliberately manufactured expansion, and are pierced near the centre of the implement; the shape of the tenth derives from the naturally wider articular end, which is perforated (GNA 172, illus 10, no 2). Although all were originally described as bone (Beveridge & Callander 1931, 334), four are actually made from longitudinally cut antler (GNA 173; 175; 432–3), and GNA 176 (illus 10, no 3) seems to be cetacean bone. Both perforated points from Bac Mhic Connain are of the kite-shaped type, made from bone (GNB 67–8). GNB 68 (illus 10, no 5) has been broken across the original perforation, and a start has been made at bifacially drilling another. The points from Foshigarry are generally longer, on average 80 mm, while those from Bac Mhic Connain are 50–60 mm in length.

The kite-shaped type has a wide distribution in Britain, and they are represented in several Atlantic broch and wheelhouse assemblages (eg Edwards 1924, 200, fig 9, no 12; Hamilton 1956, 51, fig 28, no 4; Young 1956, fig 14, no 39; Lethbridge 1952, 187, fig 4, no 5; Young & Richardson 1960, 147, fig 7, nos 6–7; Campbell 1991, 158, illus 19, no 612, illus 21, no 615; Foxon 1991, 223, fig 8.5, nos 12–15; Hedges 1987, 200, nos 79–86; MacGregor 1974, 73, fig 6, nos 43–6). However, published accounts indicate that the raw material for the points at the above sites is exclusively bone; Foshigarry differs in the use of antler. Seven examples of the second kind of point, with the natural articular end of the bone forming the widest point, were found at Burrian, and MacGregor suggests they were used as dress-pins (MacGregor 1974, 71, 75, fig 8, nos 94–100); the kite-shaped type may have been used as a needle (Campbell 1991, 158).



ILLUS 10 Perforated points. 1. GNA 174; 2. GNA 172; 3. GNA 176; 4. GNA 177; 5. GNB 68 (all of bone except 3, of cetacean bone). Spindle whorl. 6. GNA 13 (bone). Points/pins. 7. GNA 73; 8. GNA 75; 9. GNA 162 (all three of bone); 10. GNB 10; 11. GNA 161 (both of cetacean bone). Points. 12. GNA 24 (bone); 13. GNB 41 (cetacean bone); 14. GNB 12; 15. GNB 146; 16. GNA 76 (all three of bone). Socketed femur-head. 17. GNA 152 (bone). (Drawn by Marion O'Neil) Scale 1:2

## POINTS

Points were made of bone, antler, cetacean bone, and in one case bird bone, and were probably piercing tools (eg *illus* 10, nos 12–16). All have use-polish extending back from the tips. There are 37 small points (30 from Foshigarry and 7 from Bac Mhic Connain) and five large points (four from Foshigarry, GNA 24–25, 36, 38, and one, GNB 41, from Bac Mhic Connain). The raw material is longitudinally split antler, bones of sheep, cattle, and red deer; and naturally pointed bones with sharpened tips, such as cattle and red deer ulnae (eg GNA 24–5; 36; 38) and a metatarsal II from a horse (GNB 146, *illus* 10, no 15). More unusual variants include one point made from part of a sheep scapula and another from a gull radius (GNA 76, *illus* 10, no 16), which shows a markedly different technique, being struck distally to produce a length of attached diaphysis, which was worked into a thin point. The pointed end of GNB 41 differs from the other points; it may not have been used as a piercing tool. Longitudinally cut longbones and ribs from land mammals and bird bones seem to be a common raw material for points on broch and wheelhouse sites, with examples from Midhowe and Sollas (Foxon 1991, 194 and 223) and À Cheardach Mhor (Young & Richardson 1960, 155, fig 13, nos 34–6). A similar example from Burrian has been interpreted as a hair-pin because of its fragility (MacGregor 1974, 71, fig 6, no 47).

## POINTS/PINS

This category falls between points and pins and follows Foxon's classification from Midhowe and Sollas (1991, 194, 224), covering implements that have been well finished all over (and hence differ from points) but which lack the elaboration and decorative value of pins. The points/pins have an approximately circular-sectioned point, and may either be simple pins or piercing tools (eg *illus* 10, nos 7–11).

There are eight bone points/pins from Foshigarry (GNA 73, 75, 161–2, 164–6, 168), although breakage makes categorizing GNA 161 uncertain. The others are made of slices of longbone, one of which can be identified as the fibula of a young pig (GNA 75, *illus* 10, no 8). Only one point/pin was found at Bac Mhic Connain, made of cetacean bone (GNB 10).

## SPINDLE WHORLS

Three trimmed and perforated femur-heads (all probably of cattle) found at Foshigarry (GNA 12–14) can be paralleled in spindle-whorls from other Atlantic Iron Age sites such as the Broch of Gurness (Hedges 1987, fig 2.35, nos 183, 186) and Dun Cuier (Young 1956, 321). Cattle femur heads are the commonest material. They appear first in the Iron Age and continue until medieval times (MacGregor 1985, 187). Stevenson has suggested that whorl GNA 13 (*illus* 10, no 6), with five deep, hand-cut, concentric grooves, is an imitation of a lathe-turned spindle-whorl (1955, 293).

## SOCKETED FEMUR-HEADS

Two cattle femur heads (GNB 142; GNA 152, *illus* 10, no 17) bear sockets, one round and one square, each c 10 mm in dimensions. The large sockets make use as pinheads unlikely, and it is more probable they may have been intended as pegged playing pieces (cf Close-Brooks 1986, 166). No close parallels have been found for these objects. One femur head (GNB 141) was neither perforated nor socketed.

## STAMP

An unusual object from Bac Mhic Connain is an antler stamp (GNB 66: illus 16, no 4), formerly identified as cetacean bone in the original publication (Beveridge & Callander 1932, 59, fig 5, no 4). It is conical with an incised cross on the base. Black deposits adhering to the incisions were analysed by qualitative X-ray fluorescence (Appendix): although copper appeared in the spectrum, this is unlikely to account for the inlay, which may well be organic in origin, although its exact nature remains unknown.

The object has a parallel in an antler stamp from Dùn An Fheurain, Argyll (Ritchie 1971, 109, no 34 and fig 4), which has a relief cross with a raised dot in each quadrant, the whole contained within an impressed circle. This was identified at the time as a potter's stamp, the design being fairly common on sixth-century Anglo-Saxon pottery in East Anglia. However, stamped pottery is neither found in Argyll (Myres 1970, 350) nor on Hebridean sites of this period (Beveridge & Callander 1932, 65), while other known Anglo-Saxon pot stamps occur where such pottery is found (MacGregor 1985, 194). It seems much more likely that these two Scottish stamps were used on an organic material such as leather. Indeed, there is a further parallel which supports this; from the Birsay tool box, believed to be that of an Early Historic leather-worker, comes an antler stamp with an incised rectangular pattern (Stevenson 1952; Kirkness 1953).

## PERFORATED BONES

Two sheep metacarpals, bifacially perforated mid-shaft with a knife tip (GNB 70-1), are representatives of an implement type commonly found on sites from the Northern and Western Isles, for instance from the underground structure at Tota Dunaig, Vallay (Beveridge & Callander 1932, 66, fig 19), close to Bac Mhic Connain. Others were found at: Gurness (Hedges 1987, fig 2.34, nos 188, 190); in midden debris from the late wheelhouse at Jarlshof (Hamilton 1956, 79, fig 37.6); and from the wheelhouse period at Clickhimin (Hamilton 1968, 137, fig 60, no 1). They have been variously described as bobbins for thread and twine, toggles for fastening clothes, or *snoribens* (*snorri*-bones) – children's toys, which are made to whirl round by inserting twine through the hole and making the bone spin one way and then the other by pulling on the twisted twine. Both pig and sheep metapodials were used in their manufacture (MacGregor 1985, 102), and Foxon (1991, 226) suggests the straightness, symmetry, and hollow nature of the metapodial were the key features in choosing the raw material.

## TURNED OBJECTS

This category comprises objects made of antler, cetacean bone, and sheep bones, which show rotary wear-marks in the form of encircling grooves or waists (GNA 15-23, 245; GNB 6-8, 159) (eg illus 11, nos 1-4). There is variation both in the material chosen and the occurrence and appearance of the wear-marks; in some cases the wear was near the end of the implement, while in others it was towards the middle. Two objects (GNA 16 & 245), which both have two sets of encircling marks, do not have wear-marks around the whole circumference. Some of the implements are broken just below the wear-marks.

Comparable objects are widespread in Atlantic Scotland, and parallels can be quoted in cetacean bone from Kilpheder (Lethbridge 1952, 187); in antler and cetacean bone from Sollas (Foxon 1991, 226); in antler and bone from two other sites on North Uist in the NMS Beveridge Collection (Bealach Ban, GT 106 and 108, and the Udal, GT 119) and several other Western Isles sites: eg A Cheardach Mhor, South Uist (Young & Richardson 1960, 147, fig 7, nos 13-14, 156, fig

13 no 44); À Cheardach Bheag, South Uist (Fairhurst 1971, 101–102, fig 10, no 11); and Galson, Lewis (Edwards 1924, 201, fig 9, no 2). Similar objects from the Broch of Gurness utilized some alternative materials, such as bovine horn cores and a bovine metacarpal, as well as antler (Hedges 1987, 207, nos 177–82).

Lethbridge (1952, 187) suggested the Kilpheder examples had served as handles for rotary querns, but it is less clear how the sheep, antler, and smaller cetacean examples were used. These could only have fitted into a socket hole between 7 and 17 mm in diameter, and are not circular in section but reflect the natural shape of the unmodified bone. Campbell (1991, 158) has postulated that they may have been central pivots for rotary querns, although these examples are too narrow and irregular for this. MacGregor (1974, 76), in discussing examples from Burrian, is sceptical of the interpretation as quern handles, and suggests their possible use in bow drills. A thorough study of similar objects by Semenov (1964, 189–91, fig 103) suggested that examples with wear towards the middle were used as thong stretchers; partial encircling was also noted on his examples.

These objects cannot be seen as a single functional group because of the variation in size, raw material, and location of wear-marks. It is likely that the large cetacean example (GNA 23: illus 11, no 4) was used as a quern-handle, given its size and the strength of cetacean bone. The use of the others is less clear. Those with wear at the end could have been small quern handles, although the brittleness of the bone examples makes them less suited for this, and the bow-drill interpretation has much to commend it. Those with central wear must have had a different function. Whatever the function, sheep tibiae were being preferentially selected.

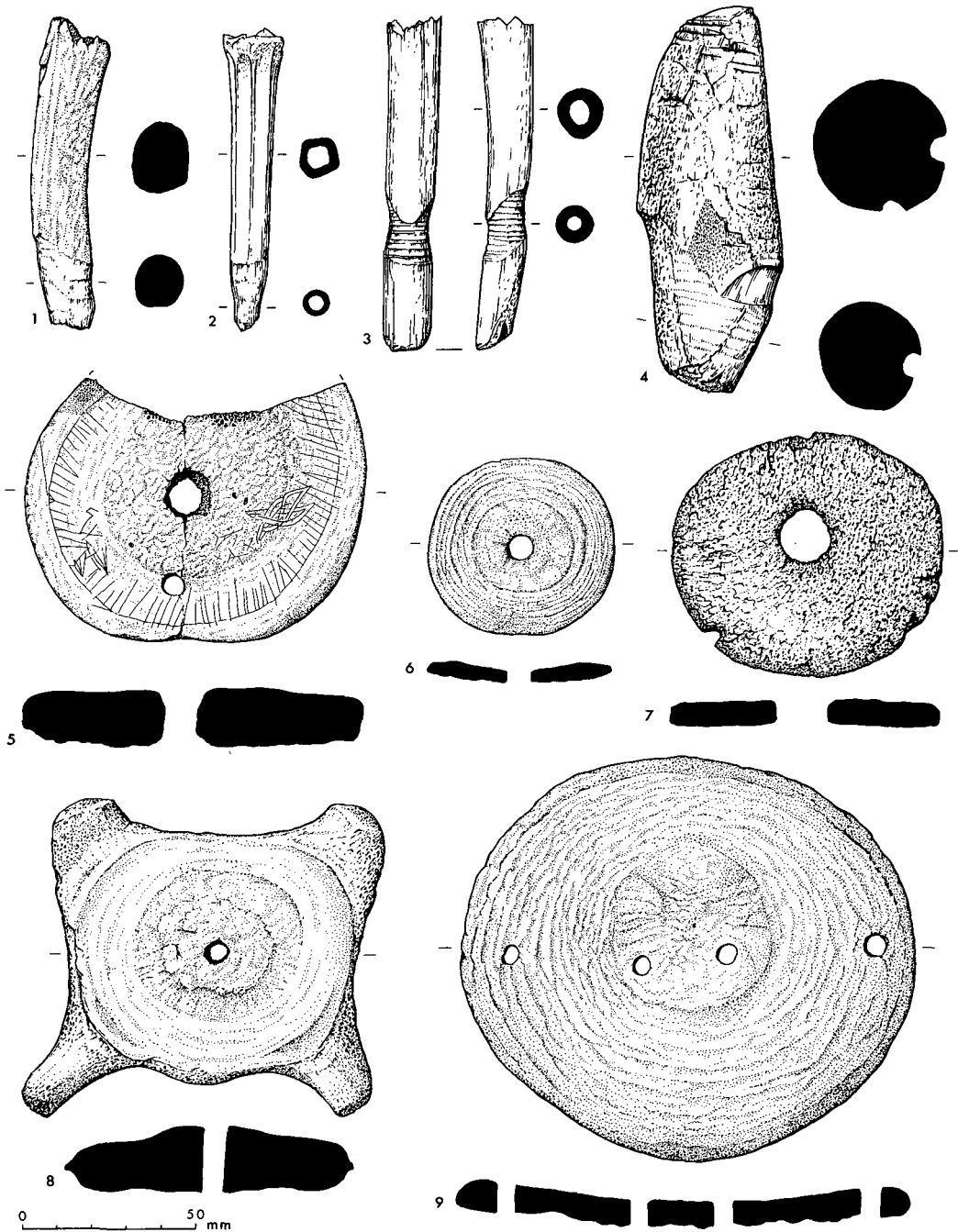
#### TUBES

A longbone (tibiotarsal) of a crane (*Grus grus*), converted into a tube 250 mm in length by cutting off the articulations, was found at Bac Mhic Connain (GNB 51). Similar objects are known from Midhowe (Foxon 1991, 202) and Sculptor's Cave, Moray (Benton 1931, 198, fig 9, no 10). The latter contained a long bronze pin and such tubes are generally thought to have served as pin-cases or similar containers, making use of the long hollow cavity of the bone. A sheep tibia (GNA 119), with both articulations removed and the protruding anterior process ground down, is a similar object.

#### CETACEAN VERTEBRAE CONTAINERS AND LIDS

Six unfused cetacean vertebral epiphyses were found at Foshigarry. They come from the lower vertebrae (below the cervical vertebrae). The three smallest (GNA 8–9; GNA 10, illus 11, no 6), 50–77 mm in diameter, have central perforations, while the largest (GNA 233), measuring 206 mm by 223 mm, is unperforated. The other two examples are more complex: GNA 11 (illus 11, no 5) (99 mm in diameter) has a large central perforation and a smaller radial one, while GNA 192 (illus 11, no 9: 130 mm by 116 mm) has four small perforations of roughly equal size along its longest axis. GNA 11 also bears incised patterns. Ogam-like decoration was incised on the plate before it broke, consisting of a thin circumferential incised line crossed by 74 thin short lines roughly at right angles to it. It is not real ogam, but was probably intended to create the impression of ogam (R M Spearman, pers comm). There are also two more elaborate interlace patterns from the use of the plate as a trial piece. The ogam-like decoration is paralleled in a similar epiphysis from the Broch of Gurness, Orkney (Hedges 1987, fig 2.32, no 174).

None of the vertebral epiphyses displays any wear in or around the perforations but some seem to have deliberately smoothed edges. A similar thin round perforated plate (GNA 438, illus



ILLUS 11 Turned objects. 1. GNA 159 (antler); 2. GNA 17; 3. GNA 15 (both of bone); 4. GNA 23 (cetacean bone). Cetacean vertebrae lids. 5. GNA 11 (with ogam-like decoration and interlace patterns); 6. GNA 10; 7. GNA 438; 8. GNB 59; 9. GNA 192. (Drawn by Marion O'Neil) Scale 1:2

11, no 7), only 8 mm thick, was made from the cancellous tissue of the bone, rather than a vertebral epiphysis. It has a large central perforation and a half perforation on the very edge of the roundel.

At Gurness, cetacean vertebral epiphyses were plausibly interpreted as lids for vessels made from the bodies of cetacean vertebrae (Hedges 1987, 207). A morphologically similar artefact, although made from a complete cervical vertebra rather than an epiphysis, was found at Bac Mhic Connain (GNB 59, illus 11, no 8). The cervical vertebrae on whales are flat and fused to each other, forming a solid block, and the processes are redeveloped. This example is probably from a Cuvier's beaked whale (*Ziphius cavirostris*), which is an uncommon whale species.

Fragments of seven hollowed-out lower vertebrae from Foshigarry probably represent containers, which would have used lids like those above (GNA 234–9, 242). One segment of such a container (GNA 242) has been carved at one end; a deep notch on either side near a pointed end gives the impression it was intentionally shaped.

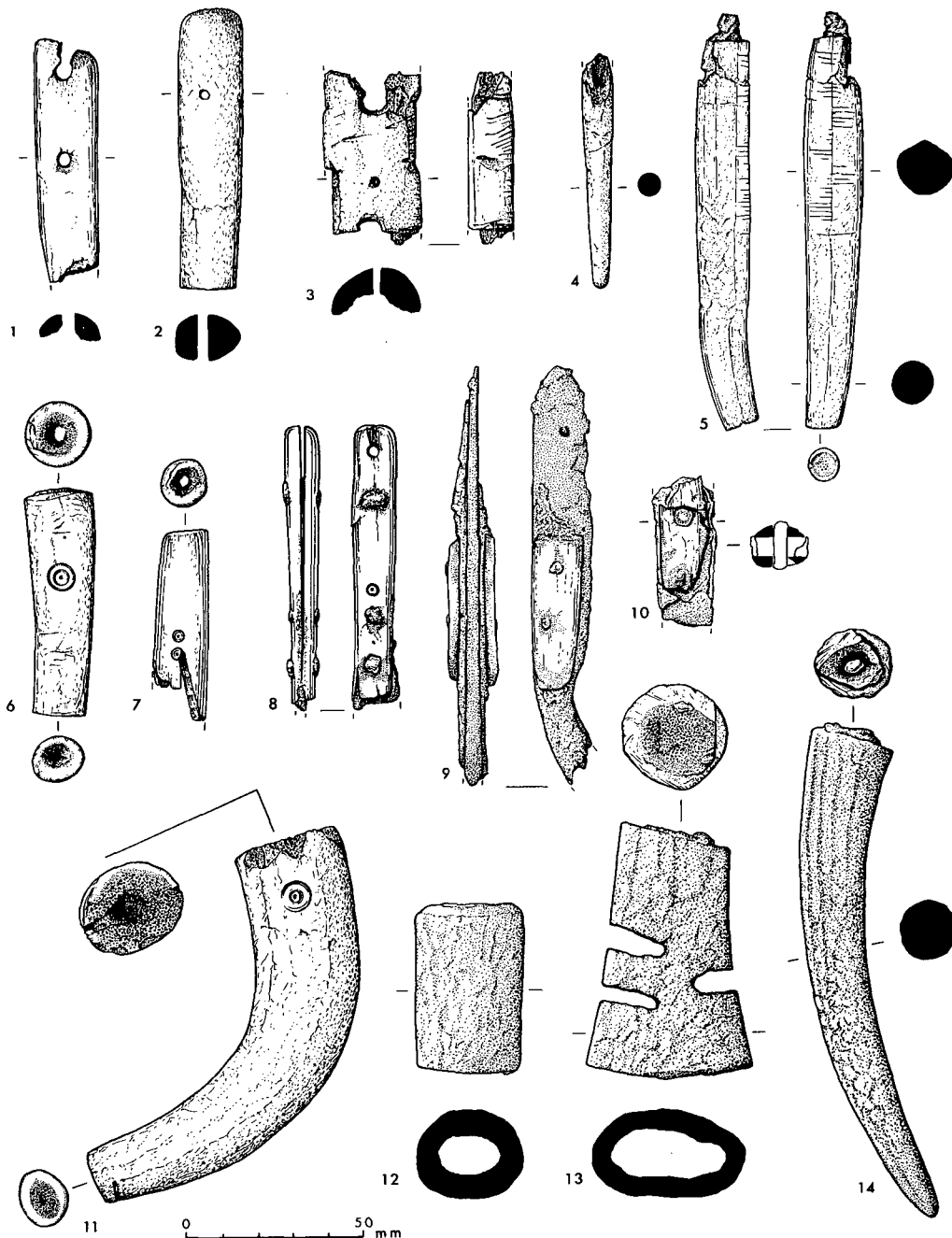
#### HANDLES AND SOCKETED ANTLER SEGMENTS

Segments of antler beam and tines were hollowed out to form rectangular or round sockets, and were probably used as handles. Although previously no iron corrosion traces had been noted (Beveridge & Callander 1931, 350), they can in fact be identified in seven handles, in both square and round sockets. However, some of the round-socketed examples (some of which have diameters up to 30 mm) may have served other purposes, since a blade tool with a circular-sectioned tang would tend to rotate in use (Campbell 1991, fiche 3:B3), and some have rather large diameters. There is an example of a handle which has an oval socket with a slit cut across it to hold the blade (GNA 109; illus 12, no 11). The surface finish varies from unpolished to smoothed, while some highly polished handles made from antler tines have ring-and-dot decoration (GNA 109, illus 12 no 11; 110; GNB 77; 136; illus 12, nos 7 & 6).

There are several handle types represented. Most are socketed at only one end (eg GNA 133, illus 12, no 14) but some are socketed at both ends (GNA 106; 108; 110; GNB 136; 157–8). Others are hollowed right through and must have been grips with a separate pommel (GNA 112, illus 12 no 12; GNA 114; 116; 188; GNB 33; 77; 156). Four handles have rivet-holes to secure the tang (GNA 105; 117, illus 12 no 3; GNB 34–5: illus 12, nos 2 & 1). Of these, GNA 117 is unusual, with three perforations (with no corrosion stains) along its axis and two pairs of notches asymmetrically placed on the sides. The notches are stained with iron corrosion, as if the piece had been clamped, and it may have been a complex handle. A well-finished handle of cetacean bone from Bac Mhic Connain (GNB 38, illus 12, no 4) tapers to a rounded butt only 4 mm in diameter, and retains a small iron tang. From its size it may have been for an awl or some similar object.

A few handles of another construction were found (GNA 120; 246/1; GNB 116; illus 12, nos 8–10), consisting of separate bone plates, riveted together to hold iron blades. In two cases the butt of the blade continues beyond the bone handle. GNB 116 is decorated with two single dots on each bone plate. GNA 120 has a suspension loop and a groove at the butt end of each plate. The tang does not continue beyond the butt, and each plate carries a ring-and-dot motif.

Probably the most interesting handle from a chronological point of view is a cetacean knife handle from Bac Mhic Connain with an ogam inscription (GNB 134: illus 12, no 5). It tapers and curves slightly at the butt, which is partly hollowed. The inscription lacks a stem line and has short vowel strokes (Holder 1990, 48). Initially it was translated as: MAQUNM? DENCO(or U)T (Beveridge & Callander 1932, 56), but Holder argues this is based on too much reconstruction, and he suggests the reading is: AQUL(N?)Q(C?)enuc?T? This is unintelligible Pictish, but may allude



ILLUS 12 Handles and socketed antler segments. 1. GNB 35; 2. GNB 34; 3. GNA 117 (all three of antler); 4. GNB 38; 5. GNB 134 (both of cetacean bone); 6. GNB 136; 7. GNB 77 (both of antler); 8. GNA 120; 9. GNA 246/1; 10. GNB 116 (all three of bone); 11. GNA 109; 12. GNA 112; 13. GNB 54; 14. GNA 133 (all four of antler). (Drawn by Marion O'Neil) Scale 1:2



to ownership of the knife (Holder 1990, 48–9). Two other antler knife handles with similar ogam inscriptions, lacking a stem line and with short vowel strokes, are known (Holder 1990, 56), one from Gurness (Hedges 1987, 83, fig 2.22 & 2.44, no 252) and one from Norfolk (Clarke 1952).

Two unusual objects deserve passing mention. GNB 54 (illus 12, no 13) is a different type of socketed implement, with two grooves sawn on one side of the beam and one on the other. Its use is unclear. What may have been meant as a handle is a cylindrical piece of tine (GNB 137, illus 16, no 5) with a very high finish. One end is broken and does not seem to have been socketed. The other end is sawn off and a bone or antler plug pierced by a small drilled hole has been inserted into the cancellous tissue. This may have been a way of making the implement stronger, but it is difficult to explain the drilled hole.

#### ANTLER RINGS

Nine very short ring-like segments of antler were found at Bac Mhic Connain (GNB 24–30; 31–2, illus 9, nos 9 and 8). These were from 15 mm to 41 mm in length, all with the cancellous tissue hollowed out. None of them fits together. No finished objects found on the site incorporated such objects, and only one of them (the smallest) displays high polish at one end. Foxon (1991, 202) lists a few antler rings from Midhowe, and suggests they may have been used in composite handles. They are also found at the Broch of Burrian (MacGregor 1974, 78, no 133), from the wheelhouse period at Clickhimin (Hamilton 1968, 137, fig 60, nos 9–10), and from Dun Cuier, Barra (Young 1956, 321, fig 13, no 21).

#### PERFORATED PLATES

Perforated rectangular antler plates, some with bone or antler pegs remaining, were found at Sollas and Midhowe and were interpreted as side-plates for wooden socketed handles (Foxon 1991, 195, 225). Two rectangular perforated plates from Foshigarry, one of antler (GNA 195, illus 7, no 6) and the other of cetacean bone (GNA 194, illus 7, no 7), may have had a similar function, while a



ILLUS 13 Cetacean bone implement. 1. GNA 232. Cetacean bone plaque. 2. GNA 227. (Drawn by Marion O'Neil) Scale 1:3

segment of roughly shaped cetacean bone with one broken perforation (GNA 193) is less diagnostic. The length and perforation spacing of these implements, and their lack of decoration, rules out use as side-plates for composite combs.

#### CETACEAN BONE PLAQUES

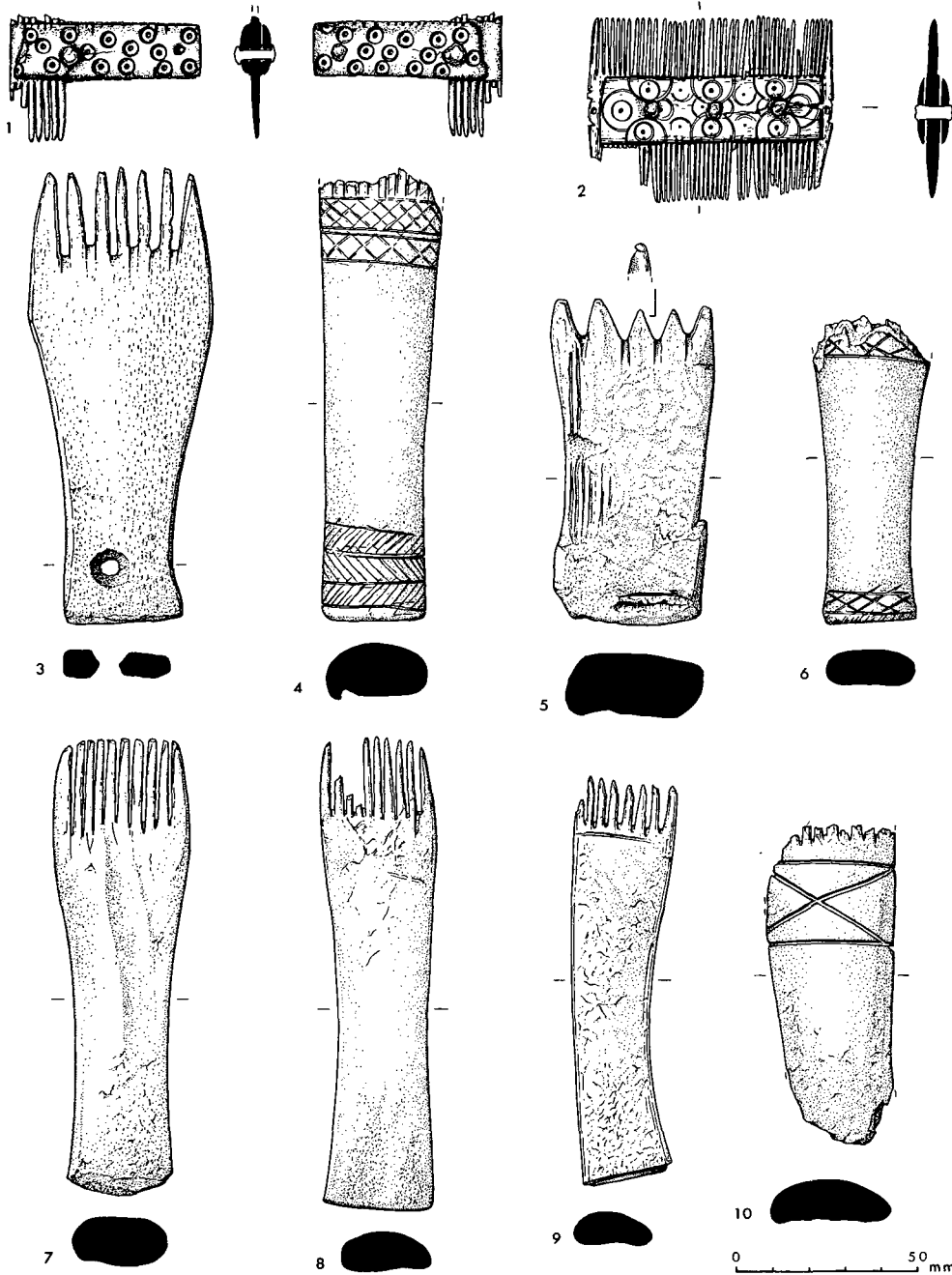
Three rectangular or square plaques of longitudinally cut cetacean bone (GNA 226–7; 229) may have been blanks for artefact manufacture, although the square one, GNA 227 (illus 13, no 2), measuring 137 mm square, has a much-polished surface with shallow criss-crossing cut-marks, and may have been a chopping board. The smallest of the three, measuring 135 mm by 75 mm, has a slightly polished surface, while the largest, 250 mm by 140 mm, is rougher. Flat cetacean bone plaques, invariably rounded and polished on all edges, measuring 85–200 mm in length, were found at the Broch of Burrian. MacGregor (1974, 86, fig 14, nos 187–9) believed they may have been smoothing boards, with a similar function to the more elaborate plaques, often with carved terminals, found in Norse contexts.

#### COMPOSITE COMBS

Two double-sided composite combs, both made of antler and with ring-and-dot decoration, were found at Foshigarry (GNA 150–1; illus 14, nos 1–2). GNA 150 now consists of only one tooth-plate with a few remaining teeth, riveted to the two side-plates, and is slightly smaller than GNA 151, which is complete apart from some broken teeth. They both seem to be the same type, with all the teeth cut to the same length, and (on GNA 151 at least) the same tooth thickness on both sides, although they differ in details such as decoration and tooth thickness. Composite combs have been well-studied, and this type is typical of the later Iron Age in Atlantic Scotland (MacGregor 1985, 92). Ring-and-dot decoration is common on such combs, and there is a particularly close parallel to GNA 150 from the wheelhouse site of Garry Iochdrach, North Uist (NMS GT 492). Antler is the normal material for such combs because of its better mechanical properties (MacGregor 1985, 74). Interestingly, the examples from Broch of Burrian, Orkney, are of bone (MacGregor 1974, 80), perhaps because antler was less readily available; the bulk of the implements from Burrian are made from bone or cetacean bone.

#### LONG-HANDLED COMBS

Long-handled combs are classic and much-debated ‘type fossils’ of the British Iron Age (Henshall 1950; Hodson 1964). They have traditionally been seen as peculiarly British (Hodson 1964, 103), but similar combs are known, albeit rarely, from continental Europe (eg the Netherlands: Tuohy 1992). There are four from each of these two sites (illus 14, nos 3–10; GNA 4–7 and GNB 2–5); all of them are antler beam segments, apart from GNA 4 which is of cetacean bone. The natural properties of antler give the combs a waisted and slightly curved shape, while the comb made of cetacean bone has been artificially waisted. Four of the antler specimens have rectilinear and/or criss-cross decoration, while the cetacean example has a knife-cut perforation for suspension at the butt end. It has been stated that cetacean bone was favoured for these implements in the Northern Isles (MacGregor 1985, 189); although this is the case at the Broch of Burrian (MacGregor 1974, 110) antler seems to be equally favoured at Midhowe (Foxon 1991, 199) and at Gurness (Hedges 1987, 197, nos 44–58). In assessing such patterns it is worth being wary of the confusion in older reports over the raw materials used (eg Beveridge & Callander 1931, 310, 328).



ILLUS 14 Composite combs of antler. 1. GNA 150; 2. GNA 151. Long-handled combs. 3. GNA 4 (cetacean bone); 4. GNA 6; 5. GNA 5; 6. GNA 7; 7. GNB 2; 8. GNB 3; 9. GNB 4; 10. GNB 5 (all of antler). (Drawn by Marion O'Neil)  
Scale 1:2

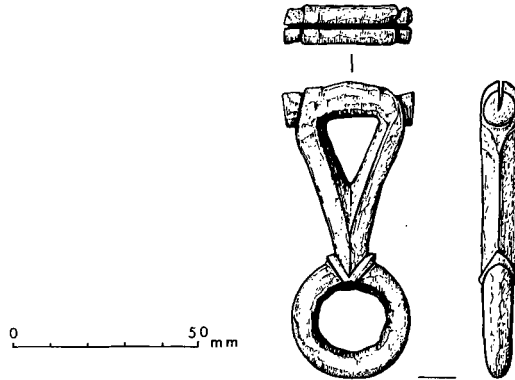
The wear patterns on the teeth are diverse; all the teeth are broken on three of the combs, but on the others it is possible to compare the teeth and wear patterns. Each specimen has teeth of generally equal size, apart from one case (GNB 3: *illus 14*, no 8) where they increase in length towards one side; the teeth were sawn either from two sides and gradually linked up, or in one cut at right angles to the implement. All the surviving teeth show general wear such as polish on and around the tips, while the tips themselves display particular wear-marks. GNB 3–4 (*illus 14*, nos 8–9) are quite similar, with the teeth pointed and round in section from wear (although the latter also has tips with crush marks). The teeth on GNB 2 (*illus 14*, no 7) are densely spaced and have kept the square section of unworn teeth, although the tips display crush marks. Those of GNA 4 (*illus 14*, no 3) are widely spaced with wear-notches at the extreme tips. GNA 5 is different altogether with its wide, V-shaped teeth, the tips being mainly worn blunt apart from two, one with a hook-like appearance (*illus 14*, no 5) and the other pointed. Transverse wear-marks are also visible on the lateral sides of the outermost teeth. GNB 3 has the most pronounced transverse wear-grooves, towards the tips on both sides, while GNB 4 shows some transverse wear-marks on the cancellous face of the lower surface of the teeth.

The possible functions have been exhaustively discussed, but are as yet unresolved (Hodder & Hedges 1977, 17; Coles 1987, 105–6). The most likely alternatives are use as hair combs, or in textile production – to push the weft into place whilst weaving (Henshall 1950, 146; Cunliffe 1984, 371–378) – or for preparing wool or flax (Coughtrey 1871, 141). Roth was convinced, after experimenting on looms with long-handled combs that each had a concave-convex dentated end, that this was not their function, since they would distort the warp and were ineffective (1918, 129–34); more recent experimental work has cast doubt on this (quoted in Coles 1987, 105). Implement morphology and wear-patterns may throw some light on the problem, although it is difficult to identify the cause of the wear-marks (Coles 1987, 105–6). At the Broch of Burrian a significant difference was noted between those combs with long handles and short teeth and those with short handles and long teeth, and MacGregor (1974, 84) suggested that this may reflect a functional difference, the longer-toothed implements perhaps being used for combing the wool preparatory to spinning. It has also been suggested (Hodder & Hedges 1977, 17) they were used to comb and ornament the hair.

All the combs from Foshigarry and Bac Mhic Connain are of the type with long handles and short teeth. It is doubtful whether GNA 5, with its irregular short, broad, blunt teeth, or GNB 2, with its densely spaced teeth with square tips, could have been used as weft-beaters, or indeed that a group of combs with such varied morphology could have served quite the same function of any kind. It is possible, for instance, that the transverse wear-marks on GNB 3–4 indicate a difference in function. Their use as hair combs and for ornamenting the hair is doubtful in view of their weight, teeth spacing, and wear-marks, which are different from the fainter traces on the Foshigarry composite combs.

#### MIRROR HANDLE

The mirror handle made of cetacean bone (GNB 61, *illus 15*) is a fine piece of craftwork (MacGregor 1976, 271). It has the shape of an openwork triangle with a ring at the apex, the junction decorated with a V-shaped ridge. The base of the triangle is elaborated at each end into a circular projection and has a groove for attaching the mirror, perhaps by wire or gut which has left transverse wear-marks across the groove. The ring and the ridge display more polish from wear on one side than the other. The trimming seems to have been done by a knife, but the longitudinal slit was sawn.



ILLUS 15 Mirror handle. GNB 61 (cetacean bone).  
(Drawn by Marion O'Neil) Scale 1:2

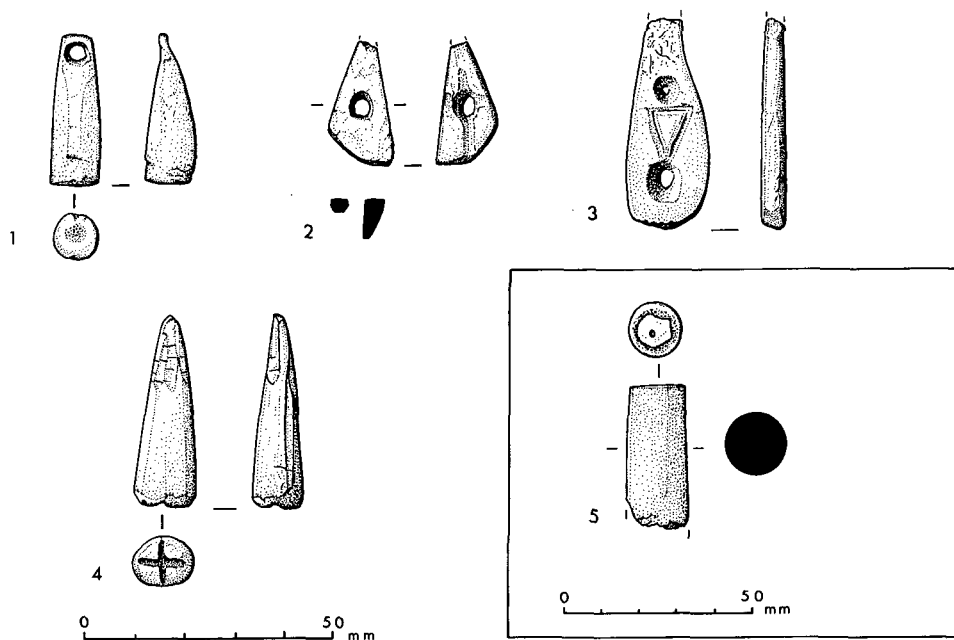
There is a possible parallel from Midhowe, a Y-shaped piece of cetacean bone with a rounded, knobbed proximal end (Foxon 1991, 202). Other parallels are found in bronze, and are probably of 1st–2nd century AD date (MacGregor 1976, nos 268–72); there is a striking similarity between GNB 61 and the bronze handle from Lochlee crannog, Ayrshire (Munro 1882, 132, fig 147). Such mirrors may well have been status objects, and it is interesting that different raw materials were used in Atlantic and Lowland areas, although this may reflect sample bias.

#### PENDANTS

Three small objects from Bac Mhic Connain were probably used as pendants. One (GNB 64: illus 16, no 3) is a pear-shaped, flat piece of cetacean bone, 41 mm in length, with two knife-cut perforations on the longitudinal axis straddling an incised triangle on one side. GNB 63 (illus 16, no 2) is a triangular piece of cetacean bone, 25 mm in length, with a knife-cut central perforation, decorated with a longitudinal groove on one side. Both display high polish on the plain side, which strengthens the idea that they were worn close to the body as pendants. The third object (GNB 62: illus 16, no 1) is a cone-shaped antler pendant with a loop at the apex and a flat base. It has a high polish all over. Although none of the three has clear wear-marks around the perforations, suspension from a thong must be the most likely method of use. Amulets and pendants of different shapes and raw materials were used for various reasons during the Iron Age (MacGregor 1985, 105).

#### BONE DICE

There is one parallelepiped die from each site; both are made of bone, GNB 65 from a sheep metatarsal and GNA 149 from a cattle metatarsal. Each carries values from 3–6, made up of ring-and-dot motifs; GNA 149 uses double rings and GNB 65 single ones. This is the earliest known British dice type (MacGregor 1985, 129), its distribution in Scotland being exclusively Atlantic. Clarke (1970, 215) listed 21 examples from broch and wheelhouse sites in the Western Isles, Caithness, Orkney, and Shetland. The majority of such dice are made from the shafts of small longbones such as sheep metapodials, which gives the characteristically elongated shape. The ends



ILLUS 16 Pendants. 1. GNB 62 (antler); 2. GNB 63; 3. GNB 64 (both of cetacean bone). Stamp. 4. GNB 66 (antler). Scale 2:3. Antler implement. 5. GNB 137 (Scale 1:2). (Drawn by Marion O'Neil)

are open and hence the values are normally restricted to the four long sides, the numbers 1 and 2 usually being omitted. Antler was also used on occasion, as well as entire small bones, but even the solid ends of these dice do not normally carry values. Although no dice of cetacean bone are known, there are two trimmed rectangles of cetacean bone from Bac Mhic Connain (GNB 48, 138) the size of which suggests they could be dice blanks. Although this is speculation, there are no other obvious implements they could represent.

#### MISCELLANEOUS ANTLER OBJECTS

GNA 94 is a long segment of beam sawn off at both ends, with one end socketed. Close to the other end is a sawn V-notch with a perforation at its base. No parallel to this has been found. GNB 21 (illus 7, no 8) is a polished segment of beam with crudely cut, irregular perforations, for which no parallel has been found. GNA 127 is a curved segment of beam with the tines removed, sawn off at both ends, one of which is rounded and highly polished.

A slice of antler had been worked into a finely made rectangular chisel-shaped object (GNA 185), with a high polished surface. The other end of this slice is unworked.

#### MISCELLANEOUS CETACEAN BONE OBJECTS

Seven objects (GNA 80, 84, 86, 90–1, 93, 224) seem to have been deliberately shaped and occasionally slightly polished, but have no wear-marks to suggest a specific purpose. It is unlikely they are debris from bone-working or blanks for other objects, considering the deliberate shape and the polish.

Other implements without a clear function include GNA 82 (illus 7, no 9), a slice of bone the general shape and high polish of which may indicate it was used for beating up the weft (cf MacGregor 1985, 188, fig 101, nos 14–17).

## CONCLUSION

### ARTEFACT RANGE

Although both sites have produced a range of similar objects, also common to other Atlantic Iron Age sites, the so-called notched implements of cetacean bone found at Foshigarry are absent from Bac Mhic Connain and from other sites, with very few exceptions. Among the more common implements, such as long-handled combs, composite combs, points, spatulae, and handles, there are some variations in the choice of raw material, both between Foshigarry and Bac Mhic Connain and in comparison with other sites. For example, the long-handled combs from the two sites are of antler (with one cetacean bone exception), while cetacean bone was more common for such implements in the Northern Isles (MacGregor 1985, 189). Of 10 perforated points from Foshigarry, four were made of antler and six of bone (one of them probably cetacean bone), while those published so far from a range of other sites were reportedly made exclusively of bone.

A variety of activities can be associated with the implements found. The evidence of crucibles, moulds, and slag indicates that metalworking was carried out at the two sites, and some of the bone and antler tools may be connected with this. Spatulae found on both sites may have been used as wax-modelling tools or potting tools. One bone spatula has copper alloy stains and was found in the furnace chamber at Bac Mhic Connain, while two other objects, of antler, from the same site also have stains of copper alloy, and may be connected with metalworking. There are no such copper-stained objects from Foshigarry.

Spindle-whorls from Foshigarry suggest spinning, and the long-handled combs from both sites may have been used for weaving. Perforated points, piercing implements in general, and polishers, are likely to have been used for the working of hides and, in the case of the first two categories, perhaps in sewing textiles. The stamp suggests leatherworking with some degree of decoration.

It has been suggested that three of the notched implements may have been used as plough-shares, which, perhaps along with the antler picks, are associated with ground preparation for agriculture. For crop-processing, rotary and saddle querns were used and it is possible that some of the turned objects were used as central pivots or handles for the rotary examples.

Bone was used for some items for leisure use or for others which were of decorative value rather than of strictly utilitarian function, for example pinheads, pins, dice, a mirror handle, and pendants; antler was used for composite combs and a pendant. However, most of the objects found are working tools or parts thereof.

### RAW MATERIAL

The deliberate selection of antler and cetacean bone for objects requiring more resilient material – for example long-handled combs, socketed handles, and composite combs – shows an understanding of the properties of these raw materials compared to the relative brittleness of bone. The bones used for implement production derive generally from those animals which would have been kept for meat and other animal products. The cetaceans are more likely to have been stranded on the beach than hunted, and antler seems to have been collected mostly when shed; there is only

one definite example of unshed antler. The utilization of cetacean bone for the manufacture of objects at Foshigarry concentrates on ribs and vertebrae, although other parts were occasionally used. At Bac Mhic Connain, a vertebra and the front limb extremities could be identified. Bones used from other species (cattle, sheep, horse, pig, bird, and red deer) were primarily the longbones and, to some extent, the ribs from cattle or red deer. On both sites, metapodials (of several species) and sheep tibiae were the most commonly used bones, being used in many different object categories, while cetacean ribs seem to have been the main bone used for the notched implements. Of the sheep bones which could be aged, all were from immature animals, suggesting that sheep were kept for meat rather than for wool.

#### GENERAL

The wealth of bone and antler artefact material preserved by the calcareous sands at these and other Atlantic sites allows a notable insight into the material culture of the Iron Age peoples of Scotland. These assemblages show the expert exploitation of locally available resources and considerable craft skills. The potential of such assemblages has long been recognized (eg Clarke 1971). Study of material in museum collections, along with that from new excavations where the full range of unworked faunal remains is recovered, will allow a much greater understanding of the Atlantic Iron Age.

#### APPENDIX

##### EVIDENCE FOR COLOURING AND INLAY

Seven objects were analysed by Dr P Herd, formerly of NMS Conservation and Analytical Research, using X-ray fluorescence (XRF) to identify surface deposits suspected to be colouring or inlay. These were: two antler objects, GNB 55 (illus 5, no 3) and GNB 152 with green stains; a sheep metacarpal (GNB 78 – a spatula); two antler handles (GNA 110; GNB 77, illus 12, no 7) with suspected black colouring or inlay in their ring-and-dot motifs; one antler ring (GNB 32, illus 9, no 8) with gold-coloured stains on the outer surface; and GNB 66 (illus 16, no 4), a stamp with a black inlay or colouring in an incised cross.

In most cases two parts of each object were analysed, one which represented the typical bone surface and one with the unusual feature. For objects GNA 110, and GNB 32, 66 and 77, there was no clear analytical difference between the colouring and the control area, and the black markings of the ring-and-dot and cross decorations could not be identified using this method. Although copper appeared in the inlay spectrum of GNB 66, it seems unlikely that it would solely account for the dark colouring of the inlay, especially as it was absent in the other inlay spectra. It may be speculated that the inlays are of organic origin, which is less sensitive to this technique.

The gold-like speckles on GNB 32 seem to be non-metallic in composition, but could possibly be an inorganic mineral. The green staining on the two antler objects and one sheep metapodial proved to be more conclusive. In each case the spectrum showed a marked increase in copper levels in the green surface. It implies that a copper (II) salt is present in the deposit, creating the green colour.

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