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4.1 Introduction

Once sites had been identified, the SFS excavations and test pits focussed on exposures of midden material across a large, but well defined, area and in this way various samples of dateable material were collected. While it cannot be claimed that this sample was truly random, so many different factors went into its selection ([Section 2.1](#)) that it probably does roughly reflect the true spatial and chronological distribution of midden material in the area. The results of the dating programme are, therefore, valuable, though they are also surprising. The middens are spread over a considerable timescale, and this has given new insights into the reasons for their creation and survival as well as preliminary information on long term aspects of culture and lifestyle in the area.

The SFS project has brought home the truth that some aspects of the way of life were very similar throughout many periods of prehistory and history. Many of the small middens discovered during test pitting are medieval or later in date. Yet there was little to distinguish them from middens 8000 years older. Many even had small quantities of worked lithics, mostly probably contemporary with the middens rather than residual from earlier times. SFS also emphasizes a complementary lesson. The late prehistoric and medieval middens undoubtedly represent only one aspect of human activity in the area during those periods. It seems likely that the earliest sites discovered in SFS similarly represent only one facet of a rich lifestyle.

4.2 Technical matters

All of the radiocarbon ages discussed here have been calibrated to produce dates BC or AD using OxCal 3.9 (Bronk Ramsey 2003) and the 1998 calibration curve ([Stuiver *et al* 1998](#)). Readers are advised to consult the list of dates available at the [Historic Scotland](#) website ([Ashmore *et al* 2000b](#)), the date list (to October 2002) for early foragers in Scotland ([Ashmore 2004b](#)) and recent copies of *Discovery and Excavation in Scotland* for detailed information on individual samples and ages quoted here.

Many ages obtained over the last 30 years from archaeological material in Scotland have very high errors or other problems such as the use of bulk samples on sites with a high degree of residuality. The errors attached to ages obtained before about 1985 often have to be increased from the originally quoted values ([Ashmore *et al* 2000a](#)). Opinions as to the reliability of some ages differ, so there is a need for a consistent way in which to express the validity of ages. Recent work on a fairly complete data set for Scottish archaeological ages provides a methodology, though it has not yet been subject to serious peer review ([Ashmore 2004b:125](#)). In essence, this work provides a weakness score for ages based on sample quality and other sample related factors. All of the ages obtained for the SFS project have a satisfactorily low weakness, but that is far from true for all of the related dates from other sites. The separate problem of whether a sample really was closely related in time to the context in which it was found can be tackled, sometimes, by obtaining several dates for single bits of short lived organic material from as many contexts as possible.

Sea water has a lower ratio of radiocarbon to normal carbon than the atmosphere. Marine material such as limpet or oyster shells, or the bones of animals which ate marine material, produces radiocarbon ages which are older than those from charcoal of the same true date. Traditionally, shell ages were calibrated on the assumption that the difference between sea water and the atmosphere was constant throughout the last 10,000 years. However, a recent study of matched pairs of samples of shell and charcoal shows that the ratio did vary significantly about 2000 years ago ([Ascough *et al* 2004:611&618–619](#)). It now seems highly likely that it varied at other times. This leaves us in the awkward position of not knowing exactly how to calibrate many of the dates obtained from shells over the past few decades, and thus how to compare the radiocarbon ages from shells in middens with the ages from other sites.

4.3 Period nomenclature

There has been some debate over the use of period nomenclature ([Ashmore 2003a](#)) and period names like 'Mesolithic' and 'Neolithic' are no longer as useful as they were before the widespread use of absolute dating methods. Indeed they can be positively misleading. For instance, three of the dates from a site with 'Mesolithic' style lithics at the Sands of Forvie near Aberdeen are, at first glance, surprisingly late ([Warren 2003:155](#)). Instead of falling before the 4th millennium, one date is about 3400 cal BC, another about 3100 cal BC and the last about 2700 cal BC. The exact stratigraphic relationship between the lithics and the charcoal used for dating might be debated, but one explanation is surely that it is quite credible that the dates could reflect sporadic visits by farmers exploiting marine resources and using a specialised (previously 'Mesolithic') tool kit to do so. Alternatively, as the excavator argues, some groups of people may have maintained earlier practices, rejecting a more settled way of life ([Warren forthcoming](#); and see [Saville 2004b:15–16](#)). Elsewhere, some bevel ended tools, once thought to have been used only before about 4000 BC, have been dated to the 3rd and 2nd millennia BC ([Ashmore 2004b:89–90](#)). In future it may, perhaps, be more fruitful if we think in terms of the use of particular toolkits for particular activities instead of assuming that all aspects of the way of life changed simultaneously when many people took up farming a few generations after 4000 BC. There may have been much more significant difference between the people of the 9th and those of the 5th millennium BC (the early and the late 'Mesolithic' in Scotland) than between those who lived before and after 4000 BC.

In the following section the term 'forager' is used to denote those who lived by hunting, gathering, and fishing (generally taken to represent the Mesolithic lifestyle, [Warren 2005](#)) rather than by farming (generally supposed to have been introduced after the 'Mesolithic' and to have provided the main source of food since).

4.4 SFS dates

In what follows we shall first look at the SFS dates. We shall then consider earlier dates from other parts of Scotland in order to place the project in a broader context and, lastly, the related dates from the Skye and Lochalsh area, mainly in 500 year blocks of time from about 7000 BC onward. We shall also take a glance at some of the sites typifying change in Scotland as a whole.

There are 51 radiocarbon ages from the SFS project as a whole (see [Tables 173 & 174](#), both below), providing an interesting picture of settlement around the Inner Sound from the earliest up to recent times. [Skip Tables](#).

[Table 173](#): Sand, Lochalsh NG 6841 4934

Description	Mat	Code	Calibrated date	Lab Age	Lab Error	d13c
A bevel ended bone artefact BT03 from sample B25A NE Spit 4, from a loose unconsolidated limpet midden (13) overlying a rockfall and covered by crushed shell and	bone, animal	OxA-10384	7050–6500 cal BC	7855	60	-21.07

turf.						
A bevel ended bone artefact BT30 from sample B25B NE Spit 7 from a loose unconsolidated limpet midden (13) overlying a rockfall and covered by crushed shell and turf.	bone, animal	OxA-10175	7050–6450 cal BC	7825	55	-21.06
A single piece of birch charcoal (sample 9/8) from the same Spit 8, Test Pit 9, near the edge of a midden as the bevel ended tool BT07 dated by OxA-9281 to 7715±50 BP and the antler dated by OxA-9280 to 7520±50 BP	charcoal	OxA-9343	6680–6460 cal BC	7765	50	-24.608
Bevel ended tool BT07 made from deer bone from the same Spit 8, Test Pit 9, of the outer edge of a midden as the antler dated by OxA-9280 to 7520±50 BP and charcoal dated by OxA-9343 to 7765±50 BP	bone, animal	OxA-9281	6650–6440 cal BC	7715	55	-21.31
Bevel ended tool BT28 made from deer bone from Spit 7, Test Pit 9, in the midden.	bone, animal	OxA-9282	6470–6240 cal BC	7545	50	-20.834
A single piece of antler (sample 9/8) from the same Spit 8, Test Pit 9, of the outer edge of a midden as the bevel ended tool BT07 dated by OxA-9281 to 7715±50 BP and charcoal dated by OxA-9343 to 7765±50 BP	antler	OxA-9280	6460–6240 cal BC	7520	50	-21.756
A bevel ended bone artefact BT29 from sample A1B NE Spit 9 from a shell free organic midden (22) overlying a sterile palaeosol and covered by the main shell midden	bone, animal	OxA-10176	5630–5470 cal BC	6605	50	-20.86
A bevel ended bone artefact BT09 from sample A2B SW Spit 10 from a shell-free organic midden (22) overlying a sterile palaeosol and covered by the main shell midden	bone, animal	OxA-10177	5540–5320 cal BC	6485	55	-21.76
A human upper left incisor from B1A Spit 3 of a shell midden 13. It underlay a layer of mixed fragmented and intact shell which had tipped or washed down the front face of the midden. The good condition of the tooth means that it may have been deposited as part of a larger portion of the skull or skeleton.	tooth, human	AA-50698	2150–1770 cal BC	3615	65	-18.5
Double bevel ended bone artefact BT11 from sample B25A NE Spit 8, from a loose unconsolidated limpet midden (13) overlying a rockfall	bone, animal	OxA-12096	6650–6470 cal BC	7744	37	

and covered by crushed shell and turf. This date replaces OxA-10152

Table 173: Radiocarbon determinations from Sand

NB: Dates from squares B24A & B were affected by the recording discrepancy noted in [Appendix 3](#) and the corrected squares B25A & B have been marked here

Table 174

Site	NGR	Description	mat	Code	Calibrated date	Lab Age	Lab Error	d13c
SFS 8 Loch A Sguirr, Raasay	NG 6084 5286	A single piece of birch charcoal (1/3) from spit 3 from midden layers at the rear of a rockshelter. This spit is higher than one dated by OxA-9254 to 2055±39 BP.	charcoal	OxA-9305	6640–6250 cal BC	7620	75	-26.587
SFS 8 Loch A Sguirr, Raasay	NG 6084 5286	Bevel ended tool of deer bone (BT 1) from Spit 2 from midden layers at the rear of a rockshelter. This spit is higher than one dated by OxA-9254 to 2055±39 BP.	bone, animal	OxA-9255	6220–6000 cal BC	7245	55	-21.632
SFS 89 Coire Sgamhadail 1	NG 7906 3826	A piece of hazel charcoal (SFS 89 S 1059B) from a shell midden TP1 C 8914 overlying angular rock fall in a substantial south facing cave at a central point near to its mouth, sheltered to the east and largely dry.	charcoal	AA-50692	2550–1950 cal BC	3815	90	-24.4

SFS 89 Coire Sgamhadail 1	NG 7906 3826	An ungulate bone (SFS 89 Cs 104) securely stratified in a shell midden TP1 C 8914 overlying angular rock fall in a substantial south facing cave, sheltered to the east and largely dry, at a central point near to its mouth.	bone, animal	AA- 50693	2290–1880 cal BC	3695	65	-22.4
SFS 77 Camusteel Bay	NG 7050 4217	A piece of hazel charcoal (SFS 77 S 1102A) securely stratified within C 7717, a shell midden at the western side of a small cave lying halfway down a cliff-face the shelter, well within the drip line. The stratigraphy was deep and contained 7 well defined contexts.	charcoal	AA- 50690	800–200 cal BC	2365	55	-26.2
SFS 20 Toscaig 2	NG 7010 3758	A charred hazelnut shell (SFS 20, S 1046A) securely stratified within context 7, one of a set of intense laminated occupation deposits TP1 C 2017 inside a deep dry cave with well	charred hazelnut shell	AA- 50669	390–110 cal BC	2195	45	-24.2

		preserved stratigraphy.						
SFS 49 Creag Na H Uamha	NG 7174 6092	An ungulate rib (SFS 49) from a shell rich midden TP2 C 2003 located close the eastern wall of the cave underlying roof fall and overlying a layer of sea rounded cobbles in a cave approximately 3m wide and unroofed until 5m into the interior.	bone, animal	AA- 50681	370–50 cal BC	2165	45	-21.8
SFS 20 Toscaig 2	NG 7010 3758	A large ungulate bone (SFS 20 S 1033C) from the same context as AA-50668.	bone, animal	AA- 50667	350 cal BC – cal AD 10	2095	40	-21.1
SFS 68 Allt na Criche	NG 6828 5037	A charred hazelnut shell (SFS 68 S 1067A) from a layer of periwinkles in a black peaty matrix TP1 C 6814 in a possible platform formed by an arc of grass covered stones outside a north facing rockshelter, lying in an extensive area of sandstone gullies, platforms and rockshelters at a height of	charred hazelnut shell	AA- 50687	350 cal BC – cal AD 10	2095	40	-25

		at least 30m OD.						
SFS 68 Allt na Criche	NG 6828 5037	A charred hazelnut shell (SFS 68 S 1066A) from a layer of black silty sand TP2 C 6823 underlying a shell midden in a rock shelter, lying in an extensive area of sandstone gullies, platforms and rockshelters at a height of at least 30m OD. A very different date AA-50686 was obtained from another charred hazelnut shell from this context.	charred hazelnut shell	AA-50685	180 cal BC – cal AD 30	2060	40	-22.1
SFS 8 Loch A Sguirr, Raasay	NG 6084 5286	A single piece of birch charcoal (1/6) from Spit 6 from midden layers at the rear of a rock shelter	charcoal	OxA-9254	170 cal BC – cal AD 50	2055	39	-26.459
SFS 20 Toscaig 2	NG 7010 3758	A deer bone (SFS 20 S 1033B) securely stratified within Context 5, one of a set of intense laminated occupation deposits TP2 C 2025 outside a deep dry cave with well	bone, animal	AA-50668	170 cal BC – cal AD 30	2055	35	-21.2

		preserved stratigraphy. Another date (AA-50667) was obtained from an ungulate bone from this deposit.						
SFS 2 Crowlin 1	NG 691 338	Birch charcoal (1/11) from Spit 11 of the central part of the lower part of a midden	charcoal	OxA-9251	cal AD 120-340	1799	37	- 26.586
SFS 2 Crowlin 1	NG 691 338	Birch charcoal (3/4) from Spit 4 of the central part of a midden.	charcoal	OxA-9250	cal AD 650-810	1296	39	- 27.691
SFS 41 Toscaig 9	NG 7009 3896	A piece of birch charcoal (SFS 41 S 1024A) from a thick occupation layer of laminated ash with shell TP1 C 4113 in a large airy rockshelter with an extensive midden of limpets and periwinkles. Another piece of charcoal was dated by AA-50678	charcoal	AA-50677	cal AD 630-990	1255	95	-24.2
SFS 77 Camusteel 2	NG 7050 4217	A piece of hazel charcoal (SFS 77 S 1102B) securely stratified within C7717, a shell midden at the western side of a small cave lying halfway down a cliff-face	charcoal	AA-50691	cal AD 680-890	1235	35	-24.6

		the shelter, well within the drip line. The stratigraphy was deep and contained 7 well defined contexts.						
SFS 77 Camusteel 2	NG 7050 4217	A charred hazelnut shell (SFS 77 S 1101A) from the same context as AA-50689.	charred hazelnut shell	AA-50688	cal AD 690-960	1205	40	-26
SFS 77 Camusteel 2	NG 7050 4217	A pig or boar right tibia (SFS 77 S 1101B) securely stratified within a possible floor 7715, at the western side of a small cave lying halfway down a cliff-face, well within the drip line. The stratigraphy was deep and contained 7 well defined contexts. See also AA-50688 from the same context.	bone	AA-50689	cal AD 780-1000	1130	35	-21.6
SFS 41 Toscaig 9	NG 7009 3896	A piece of birch charcoal (SFS 41 S 1024B) from a thick occupation layer of laminated ash with shell TP1 C 4113 in a large airy rock-shelter with an extensive	charcoal	AA-50678	cal AD 1030-1240	885	35	-26

		midden of limpets and periwinkles. Another piece of charcoal was dated by AA-50677						
SFS 6 Ashaig 1, Lochalsh	NG 6866 2420	Hazel charcoal (1/4) from Spit 4 of an open midden	charcoal	OxA-9278	cal AD 1215–1290	771	32	-26.39
SFS 6 Ashaig 1, Lochalsh	NG 6866 2420	Birch charcoal (1/12) from the deepest deposit, Spit 12, of an open midden	charcoal	OxA-9277	cal AD 1210–1295	769	36	- 25.639
SFS 6 Ashaig 1, Lochalsh	NG 6866 2420	Birch charcoal (1/6) from Spit 6 of an open midden	charcoal	OxA-9279	cal AD 1220–1390	723	33	- 27.138
SFS 49 Creag Na H Uamha	NG 7174 6092	A piece of hazel charcoal (SFS 49 S.A) from Spit 8 in one of two clear contexts TP1 behind an enclosure wall in a shell midden 1002 in a cave approximately 3m wide and unroofed until 5m into the interior. Another similarly dated sample AA-50680 comes from the same context.	charcoal	AA-50679	cal AD 1290–1410	625	35	-28.2
SFS 49 Creag Na H Uamha	NG 7174 6092	A piece of willow charcoal (SFS 49 S.B) from the same context as AA-50679.	charcoal	AA-50680	cal AD 1290–1410	620	35	-26.6
SFS 114 Fergus' Shelter	NG 7571 3714	A red deer, proximal metacarpal	bone, animal	AA-50697	cal AD 1300–1420	580	30	-21.3

(SFS 114 S 1081B) from a distinct layer of limpet midden TP1 C 11414 lying on natural roof fall which precluded excavation to bedrock in the lowest of a series of conjoined, north-east facing rockshelters with much repaired walls along their perimeters, below the drip lines. This site lies c1.5km from the sea but contains a large shell midden. A piece of birch charcoal from the same context was dated as AA-50696.

SFS 114 Fergus' Shelter	NG 7571 3714	A piece of birch charcoal (SFS 114 S 1081A) from the same context as AA-50697	charcoal	AA-50696	cal AD 1300-1420	575	30	-27.1
SFS 41 Toscaig 9	NG 7009 3896	A cow patella (SFS 41 S 1020C) from a thick occupation layer of laminated ash with shell TP1 C 4112 in a large airy rock-shelter with an extensive	bone, animal	AA-50676	cal AD 1320-1450	525	35	-21.7

		midden of limpets and periwinkles.						
SFS 2 Crowlin 1	NG 691 338	Birch charcoal (1/6) from Spit 6 of a test pit in the central part of a midden	charcoal	OxA-9252	cal AD 1400–1480	477	35	-26.44
SFS 99 Clachan Church	NG 7137 4576	A charred hazelnut shell (SFS 99 SA) from the same context as AA-50695.	charred hazelnut shell	AA-50694	cal AD 1320–1620	475	45	-23.6
SFS 66 Ard Clais Salacher 2	NG 6829 5123	A charred hazelnut shell (SFS 66S 1052A) from a well defined shell midden layer (TP1 C 6614) low down in a brown matrix inside a rockshelter situated in the sheltered base of an old sea cliff. Some recent rock fall from the cliff face is visible though the undulating interior.	charred hazelnut shell	AA-50684	cal AD 1440–1640	375	55	-23.9
SFS 66 Ard Clais Salacher 2	NG 6829 5123	A cut cow metatarsal, (SFS 66 S 1052B) from a well defined shell midden layer (TP1 C 6614) low down in a brown matrix inside a rockshelter situated in the sheltered base of an old sea cliff. Some recent rock fall from	bone, animal	AA-50683	cal AD 1450–1640	355	45	-22.3

		the cliff face is visible though the undulating interior.						
SFS 66 Ard Clais Salacher 2	NG 6829 5123	A cranial fragment from a pig (SFS 66 S 1052C) from a well defined shell midden layer (TP1 C 6614) low down in a brown matrix inside a rockshelter situated in the sheltered base of an old sea cliff. Some recent rock fall from the cliff face is visible though the undulating interior.	bone, animal	AA-50682	cal AD 1450-1640	355	35	-21.1
SFS 41 Toscaig 9	NG 7009 3896	A charred hazelnut shell (SFS 41 S 1020A) from a thick occupation layer of laminated ash with shell TP1 C 4112 overlying shell midden 4113 in a large airy rockshelter with an extensive midden of limpets and periwinkles, shell midden.	charred hazelnut shell	AA-50674	cal AD 1460-1640	350	30	-25.2
SFS 22 Crowlin 3	NG 6902 3415	A pig radius (SFS 22 S.C) from a wet deposit of cream laminations	bone	AA-50671	cal AD 1450-1650	340	40	-21.2

		TP1 C 3005 at the back of the cave below a compacted deposit of charcoal rich soil C3004 in a former sea cave, which has collapsed to form a V-shaped cleft. A hazelnut shell has been dated (AA-50672) from the same context.						
SFS 68 Allt na Criche	NG 6828 5037	A charred hazelnut shell (SFS 68 S 1066B) from the same context as AA-59685 which provided a very different date.	charred hazelnut shell	AA-50686	cal AD 1470–1640	340	30	-24.5
SFS 41 Toscaig 9	NG 7009 3896	A charred hazelnut shell (SFS 41 S 1020B) from a thick occupation layer of laminated ash with shell TP1 C 4112 overlying shell midden 4113 in a large airy rockshelter with an extensive midden of limpets and periwinkles, shell midden.	charred hazelnut shell	AA-50675	cal AD 1480–1650	325	35	-23.3
SFS 2 Crowlin 1	NG 691 338	Pointed tool of deer bone BT23 from Spit 5 of a	bone, animal	OxA-9253	cal AD 1480–1660	316	39	-20.873

		test pit in the central part of the midden						
SFS 26 Crowlin 7	NG 6840 3500	A charred hazelnut shell (SFS 26 S 1091A) from an organic rich lens of shell, bone and charcoal TP1 C 2613 abutting bedrock in a large, open rock shelter. Test Pit 1 was located within the small area of visible midden.	charred hazelnut shell	AA-50673	cal AD 1440–1800	315	60	-25.4
SFS 99 Clachan Church	NG 7137 4576	A charred hazelnut shell (SFS 99 SC) from a sealed old ground surface 9914 containing pottery, low down in the stratigraphy of an open midden site with six clear contexts lying about 12m from the southern graveyard wall. See also AA-50694.	charred hazelnut shell	AA-50695	cal AD 1480–1670	295	35	-25.1
SFS 22 Crowlin 3	NG 6902 3415	A charred hazelnut shell (SFS 22 S.A) from the same context 3005 as AA-50671.	charred hazelnut shell	AA-50672	cal AD 1660–1960	145	55	-23.3
SFS 22 Crowlin 3	NG 6902 3415	An ungulate longbone SFS 22 S.B) from a black humified layer TP1 C 3002 well	bone	AA-50670	cal AD 1680–1960	75	30	-21.3

		below the surface at the back of a former sea cave, which has collapsed to form a V-shaped cleft.						
SFS 22 Crowlin 3	NG 6902 3415	An ungulate longbone SFS 22 S.B) from a black humified layer TP1 C 3002 well below the surface at the back of a former sea cave, which has collapsed to form a V-shaped cleft.	bone	SUERC-1166 Recount of AA-50670	cal AD 1660–1960	140	50	-21.8

Table 174: Radiocarbon determinations from the test pitted sites

Ten radiocarbon ages, including the earliest, relate to the main excavated site at Sand (see [Table 173](#), above). Four of these derive from samples taken from the initial test pits in 1999, five relate to samples taken during excavation in 2000, and one was later submitted to date a human tooth from the upper levels of the midden. An eleventh date, OxA-10152, originally formed part of the suite of determinations from Sand, but was dismissed as unsound following advice from the laboratory in December 2002. This date was replaced by OxA-12096 that was taken from the same bevel ended tool.

These results confirm a mid-late 7th millennium BC date for most of the Mesolithic remains from Sand. There are two mid 6th millennium BC dates, and one late 2nd millennium BC date.

Forty-one dates come from the test pitted sites (see [Table 174](#), above). These include sites around the Inner Sound, mostly targeted for the presence of visible midden. All but two of the sites are rockshelter or cave sites, the exceptions being SFS 6, Ashaig 1 and SFS 99, Clachan Church, both of which are open middens, both potentially associated with early Christian sites. They provide a range of dates from the 7th millennium into recent times. This date list is interesting not only for what is there, but also for the gaps. Both are considered below.

4.5 The wider context of Scotland's First Settlers

Various authors have argued that finds of Scottish tanged points imply an early occupation of Scotland ([Morrison & Bonsall 1989](#)). However, the tanged points are all isolated finds and there are, as yet, no radiocarbon ages for contexts that include tanged points. Most of these artefacts can be related to Saville's "ragbag of undiagnostic forms" ([Saville 2003:343](#)). Of some half dozen examples, [Ballin & Saville](#) only accept the tanged points from Tiree and Shildaig as genuine ([Ballin & Saville 2003:124](#)). On the other hand, tanged points could be taken to support an argument that Scotland was settled early, at the same time as Arctic Norway (for example [Morrison & Bonsall 1989:135](#); [Finlayson 1999:881](#)) whence there are dates which demonstrate settlement before 9500 cal BC, and perhaps before 10,000 cal BC ([Thommessen 1996](#)). Reindeer, often associated with the hunter-foragers who used tanged points, survived at least until the second half of the 8th millennium near Inchnadamph, not far from Shildaig ([Murray et al 1993](#); [Kitchener et al 2004:74–5](#)). It is therefore credible that early hunters and foragers were present in Scotland soon after the end of the Younger

Dryas.

The earliest available direct Scottish 14C ages for human activity come from Cramond, Edinburgh and imply settlement somewhere in the period between 8500 and 8300 cal BC (Lawson 2001). A date from a small forager camp at Manor Bridge, Peebles (Warren 2005) and a date from a site with abundant flake debitage, cores and microliths at Daer Reservoir 1 near Biggar also suggest occupation in the second half of the 9th millennium BC (Ward 1995:87; 1997:75; 1998:128). Additionally, the round house site at East Barns, Dunbar, East Lothian (Goode 2003) has been dated to about 8000 cal BC, and this is similar to or slightly earlier than the date of another round house at Howick, Northumberland (Waddington *et al* 2003). These dates all come from recent work, and they have shown that people were in SE Scotland around the mid 9th millennium, well before most tree species, in a landscape dominated by grass, herbs, birch, willow and hazel scrub, and less than 1500 years after the end of the Loch Lomond mini-glaciation. Current evidence thus suggests that though these early foragers used conventionally 'late' narrow blade microliths (in English terms, Jacobi 1973; 1976; Pitts & Jacobi 1979) they entered Scotland from the south and east rather than up the Irish channel as has been suggested (Wickham-Jones 1990). This would fit with Saville's recent observation that the lithic artefacts do not show connections with Ireland at this early period (Saville 2003). Nevertheless, contacts may not always be reflected in lithic assemblages (Woodman 2004:294-5) and the possibility of contacts up and down the west coast of Scotland and the east coast of Ireland must be admitted, especially later on.

By the mid 8th millennium the settlement base was wider. The earliest ages for human activity from the spread of material at Kinloch, Rùm (Wickham-Jones 1990), and the specialised site at Fife Ness in eastern Scotland (Wickham-Jones & Dalland 1998a & 1998b) suggest that occupation had spread along the current west and east coasts within a century either way of 7500 cal BC. The next earliest site, and the earliest to show strong evidence (albeit as a result of better preservation) for intensive use of coastal resources is a midden in the rock-shelter at Druimvargie near Oban whence a bevelled tool has been dated to the second half of the 8th millennium cal BC (Bonsall *et al* 1995).

The available dating evidence is still patchy, however, and does not address some of the most challenging questions about late forager populations (Ashmore 2004a:92). The number of forager sites peaked around 4400 cal BC, and on current evidence it fell sharply again about 4200 cal BC, well before the widespread adoption of farming perhaps around 3800 cal BC. So far the evidence does not contradict Armit and Finlayson's suggestion that Scotland became, in places, "substantially occupied" shortly before farming was adopted (Armit & Finlayson 1996; Finlayson 1999; Saville 2004b:15-16), but it does not clearly support it either. Meanwhile, some aspects of the forager way of life seem to have been present throughout the next two millennia into the 2nd millennium (Ashmore 2004a:92).

4.6 The sequence of human activity in Skye, Lochalsh and nearby areas

A variety of sites is represented by the 84 dates available for Skye, Lochalsh and nearby areas. The dated SFS sites add to a respectable body of information from the wider area (Ashmore 2004b). The distribution of sites in time largely reflects the types of site (mostly small shell middens) chosen for examination by the SFS project, earlier work at Kinloch (Wickham-Jones 1990), and the numbers of dates obtained from each site. Nevertheless, the distribution of middens, as remarked above, shows that foraging has never really disappeared from coastal lifestyles.

4.6.1 Probably between 8000 and 7000 cal BC

All the dates for this period are from the settlement at Kinloch (Wickham-Jones 1990). All have quite large errors and suggest that settlement here probably started around the middle of the 8th millennium BC. The date (OxA-10152) from Sand relating to this period and included in a recent summary of forager related dates (Ashmore 2004a:figure 6.7; 2004b:102) has been withdrawn, following advice from the laboratory. There are thus no bevel ended tools, from any site in Scotland, dated to this period.

Just to the north of the Inner Sound, there are dates associated with reindeer, suggesting their survival at least until the second half of the 8th millennium BC at Inchnadamph (Murray *et al* 1993). Elsewhere, reindeer are closely associated with early foraging populations (Kitchener *et al* 2004:74) so that their presence in the vicinity makes it quite credible that

early foragers may have been present in the area soon after the end of the Younger Dryas.

4.6.2 Probably between 7000 and 6500 cal BC

There are dates from charred hazelnut shell from Kinloch, Rùm ([Wickham-Jones 1990](#)) and Camas Daraich in South Skye ([Wickham-Jones & Hardy 2004](#)), and from four bevel ended bone tools found at Sand.

The earliest dates at Sand all come from the main body of midden, from Area B1, Context 13, and from Test Pit 9 which was in this area (see [Illustration 530](#), Table below). Despite the recording problems in 2000 ([Section 3.2](#); [Appendix 3](#)) these dates are remarkably consistent. Most come from lower spits within Context 13, one (OxA-10384) is from Spit 4. There is a small plateau in the calibration curve which results in the weight of their probability distributions being between about 6700 and 6600 cal BC.

8000	7000	7
7000	6500	14
6500	6000	10
6000	5500	1
5500	5000	4
5000	4500	0
4500	4000	0
4000	3500	2
3500	3000	1
3000	2500	2
2500	2000	6
2000	1500	0
1500	1000	1
1000	500	1
500	0	8
0	AD 500	1
AD 500	AD 1000	5
AD 1000	AD 1500	10
AD 1500	AD 1750	8
AD 1750	present	3
Total		84

Illus 530: Numbers of dated sites in Skye and Lochalsh, including non-SFS dates; dates by half millennium except at beginning and end

4.6.3 Probably between 6500 and 6000 cal BC

Dates falling in this period come from midden deposits at SFS 8, Loch a Sguirr rockshelter in Raasay, SFS 1 An Corran (where there is a directly dated residual bevel ended tool above a late 6th millennium context) and Sand. The open-air lithic site at Camas Daraich, Skye also yielded dates from this period ([Wickham-Jones & Hardy 2004](#)). Dates from artefacts comprise those from Sand, Loch a Sguirr and An Corran which relate to bevel ended tools (see [Tables 173 & 174](#), above; [Table 175](#), below).

Description	Mat	Code	Calibrated date	Lab Age	Lab Error	d13c

Red deer bone bevel ended tool from a shell midden, in deposits containing microliths made of local stone, on a ledge at the base of east facing cliffs.	bone, animal	OxA-4994	6600–6230 cal BC	7590	90	
A ruminant long bone found in the basal layer of red clay. It may have been introduced from elsewhere long after death. The context above it contains a bone tool dated to 7590±90 (OxA-4994) BP. See also AA-27745.	bone, animal	AA-27746	5530–5210 cal BC	6420	75	- 22.8
A broken bevel ended bone tool made from a ruminant long bone fragment found in the main shell midden (mostly of limpet shells) at the rear of the rock shelter. See also AA-29315	bone, animal	AA-29316	5310–4990 cal BC	6215	60	- 20.6
A bevel ended bone tool made from a red deer metatarsus, found in the main shell midden (mostly of limpet shells) at the rear of the rock shelter.	bone, animal	AA-29315	4220–3800 cal BC	5190	55	- 21.3
One of several disarticulated human bones in a black greasy midden. Above this layer lay later prehistoric contexts. There is potential for mixing or intrusion from above.	bone, human	AA-27744	3340–2890 cal BC	4405	65	- 20.2
A broken bevel ended bone tool made from a red deer metacarpus found in a black greasy midden, mostly of limpet shells, which probably post-dates the main midden but could include material derived from it.	bone, animal	AA-29311	2890–2580 cal BC	4175	60	- 23.3
A broken bevel ended bone tool made from a ruminant long bone fragment, found in a black, greasy midden, mostly of limpet shells, which probably post-dates the main midden, but could include material derived from it.	bone, animal	AA-29314	2620–2300 cal BC	3975	50	- 20.6
One of several disarticulated human bones in a deposit almost entirely composed of limpet shells, the lower part of which contains a bone tool dated to 7590±90 (OxA-4994)BP. There was potential for mixing or intrusion from above.	bone, human	AA-27743	2560–2140 cal BC	3885	65	-24
A broken bevel ended bone tool made from a red deer metapodium from a deposit of shell midden just above the natural base of the rockshelter floor and overlain by a black greasy midden deposit with Mesolithic artefacts.	bone, animal	AA-29313	2230–1870 cal BC	3660	65	- 23.9
Burnt animal bone (pig) found in the basal layer of red clay. It may have	bone, animal	AA-27745	1520–1210 cal BC	3120	60	-26

been introduced from elsewhere long after death. The context above it contains a bone tool dated to 7590±90 (OxA-4994)BP.						
A complete bone point made from an ovicaprid tibia found in the main shell midden (largely composed of limpet shells) at the rear of the rockshelter. This tool is of a type likely to be later prehistoric.	bone, animal	AA-29312	210 cal BC – cal AD 80	2045	60	-22

Table 175: An Corran, radiocarbon determinations (Saville & Miket 1994; Saville 1998a:126–7)

The site at SFS 1, An Corran in Staffin in Skye, is particularly interesting because of the depth and quality of its midden deposits (Hardy *et al* forthcoming; Saville 1998). An Corran lies on a broad shelf below a rockshelter that has now gone. Only a small proportion of the site was excavated, in advance of disturbance due to roadworks. The deposits comprised midden material roughly a metre deep, which overlay an old ground surface on which there were further non-organic finds. The finds included lithics of Mesolithic aspect; interestingly there were both narrow blade microliths and broader microliths, all of local raw materials. Higher up in the midden there was also pottery. The dates from An Corran indicate that activity here began early, but in contrast to Sand the midden yielded a broad sweep of dates running into the Bronze Age and possibly later prehistory. It seems that activity took place at An Corran over a long period of time, if only intermittently. The presence of well preserved human bones in the midden suggests that this activity included burial of some sort.

The four dates from Sand all come from Test Pit 9 (see Table 173, above), which was dug as part of the initial investigation of the site in 1999. Although Test Pit 9 clearly related to the main shell midden (Section 3.2), the precise stratigraphy of the deposits within the midden sequence is less clear.

4.6.4 Probably between 6000 and 5500 cal BC

The only evidence for this period is that from Kinloch which comes from charcoal in a buried soil by the burn to one side of the site. Although a respectable number of dates has been obtained for this period in Scotland (Ashmore 2004a:87), there is a curious lack of dates from hazel between roughly 6000 BC until about 4500 BC and hazel only reappears about 4000 BC (Ashmore 2004a:89).

The lack of dates at Sand from the earlier 6th millennium is interesting. While this might, of course, relate to the areas of the site that were sampled for dating, it is also possible that the site was abandoned at this time.

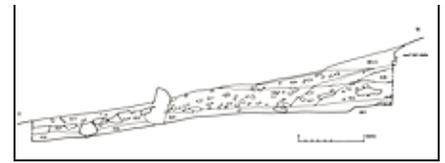
4.6.5 Probably between 5500 and 5000 cal BC



Illus 345: Trench A, north-facing section showing slope in ground

After the early dates there is an apparent gap of c1000 years in the evidence from Sand, and then there are two mid 6th millennium BC dates, both from Context 22 in Area A. These dates both came from just below the main Mesolithic deposits of midden in Area A (Section 3.2). Initially it was clearly contradictory to have later dates from a lower deposit, but close examination of the deposits reveal that the higher, earlier material has slumped from the main body of midden which lies just uphill of Area A. The site at Sand is on a considerable slope (Section 3.1; see Illustration 345, left) and the lower edges of the Mesolithic midden were clearly originally unstable. In this way a small stretch of the stratigraphy at Sand became inverted (see Illustration 531, lower right).

These mid 6th millennium dates are also interesting because both come from a very specific midden-free context (Context 22) in Area A. In this respect the find of a ground stone axe also from this area, in Context 27 which was related to Context 22,



Illus 531: Sand –north-facing section A6–A1 showing the steep slope and inverted stratigraphy

is significant. Ground stone axes are not usually associated with the Scottish Mesolithic, but rather with the Neolithic and later (Section 3.3). Although these dates fall before the time when the economic and other bases of life in the area are usually considered to have been changing, they certainly provide added support for later activity at Sand. Together the axe and the different nature of the deposits emphasise the advent of changes to the local lifestyle.

Further evidence from this period around the Inner Sound is scarce, but a broken bevel ended bone tool and a ruminant bone from An Corran indicate activity here (see Table 175, above; Hardy *et al* forthcoming).

4.6.6 Probably between 5000 and 4000 cal BC

No evidence from sites around the Inner Sound except perhaps right at the end.

4.6.7 Probably between 4000 and 3500 cal BC

A date from this or late in the previous period comes from a bevel ended bone tool made from a red deer metatarsus from SFS 1, An Corran. Charcoal from a hollow at Kinloch with no diagnostic material dates from this or the subsequent half millennium.

The massive timber long houses at Balbridie in Aberdeenshire (Fairweather & Ralston 1993) and Claish in Stirling (Barclay *et al* 2002) belong to the second half of this period. Charred barley and pottery and the earliest burials in chambered cairns appear around 3800 cal BC (Ashmore 2004c:127,129&131) all of which suggests that the major changes to the economic and social bases of life were well established in Scotland before the end of this period.

4.6.8 Probably between 3500 and 3000 cal BC

One of several disarticulated human bones from SFS 1, An Corran, belongs to this period. It may reflect final disposal of human bones previously buried elsewhere.

4.6.9 Probably between 3000 and 2500 cal BC

There are dates from SFS 1, An Corran, from a broken bevel ended bone tool, and from Kinloch, from charcoal from a midden-type dump in the peat filling of the burn.

4.6.10. Probably between 2500 and 2000 cal BC

There are dates for this period from two bevel ended tools found at SFS 1, An Corran as well as from one of several disarticulated human bones at the site, and from Kinloch on wood from a deposit of rock and debris in the peat filling of the burn. In addition there are two dates from the large cave at SFS 89, Coire Sgamhadail 1, among a group of caves and rockshelters with visible midden and lithics. It is possible that some of these belong between 2000 and 1500 BC.

More widely in Scotland, this period saw the introduction of metal working including a flat dagger from Dail na Caraidh near Fort William (Barrett & Gourlay 1999; Sheridan 2002; Ashmore 2004c:133; Needham 2004:228&231). It also saw a trend towards burials in cists and graves, though the change was neither as dramatic nor as complete as once thought. There is an increasing number of dates from human bone in cists with multiple burials, and single inhumations where the bones seem to have been conserved elsewhere before they were put in cists (Gibson 2004).

4.6.11 Probably between 2000 and 1500 cal BC

As noted some of the above dates may possibly relate to this period, and there is also a date from one of the human teeth from Sand. It was taken from a human molar found in Area B2, in Context 13 Spit 3 which was near to the 20th century ground surface. Although it was not

apparent during excavation, the post excavation work has revealed several different strands of evidence that indicate re-use of the rockshelter at Sand at this time ([Section 3.2](#)). There was other more recent artefactual material in this area of the site, including both fragments of coarse pottery ([Section 3.8](#)) and unclassified slag from metal working ([Section 3.9](#)). It seems likely that the surface of the midden here has always lain near to the ground surface, and been relatively friable, so that the remains of later activity, however small scale, could percolate into the midden material.

At some stage in the later 2nd millennium BC a bronze smith made use of the shelter afforded by the rock formation at Sand, though the slight amount of evidence suggests that this was not for long.

4.6.12 Probably between 1500 and 1000 cal BC

A single burnt pig bone has been dated to this period from SFS 1, An Corran.

4.6.13 Probably between 1000 and 500 cal BC

At SFS 77, Camusteel 2, there is charcoal from a small cave that has been dated to this period. The cave contained visible midden and lithic material ([Section 2.2](#)).

4.6.14 Probably between 500 BC and 0

There are dates from hazelnut shell and mammal bone from a deep and dry cave with visible limpet midden, including some lithic finds, at SFS 20, Toscaig 2. Other dates come from an unworked bone from the rockshelter at SFS 49, Creag-na-h-Uamha, charred hazelnut shell from the rockshelters at SFS 68, Allt na Criche, and charcoal from SFS 8, Loch A Sguirr, as well as a complete bone point from SFS 1, An Corran.

The settlement at Tungadale ([Miket 2002](#)), the broch at Floddigarry ([Martlew 1985](#)) and the dun at Dun Ardtreck ([MacKie 2000](#)), all in Skye, probably date to this period. The High Pasture Cave below a cluster of round and U-shaped stone structures, also in Skye, contained butchered bone from pigs, cattle and red deer. Pig bones predominated and a recently obtained radiocarbon age from one of them implies a date between about 400 and 150 cal BC. This may represent feasting and subsequent disposal of bones. The cave also contains bronze working debris, and the occurrence of fish bone and marine shell shows use of coastal resources ([Birch 2004](#):42-3). This demonstrates, as suggested above, that at least the later middens located during SFS are one part of a rich economic system.

4.6.15 Probably between 0 and AD 500

There is a date from this period on charcoal from the midden in the large rockshelter at SFS 2, Crowlin 1. In addition, a handled bowl of alder wood from Talisker in Bracadale ([Earwood 1991 & 1993](#)) and bog butter from Kyleakin, Strath ([Earwood 1991](#)), both in Skye, probably date to this period.

4.6.16 Probably between AD 500 and 1000

The midden at SFS 2, Crowlin 1 yielded one date, from charcoal, and there are also dates from charcoal from the rockshelter at SFS 41, Toscaig 9, and from both charcoal and pig bone from the small cave SFS 77, Camusteel 2.

4.6.17 Probably between AD 1000 and 1500

There are dates from charcoal and mammal bone from the sites at SFS 41, Toscaig 9; SFS 6, Ashaig 1; SFS 49, Creag-na-h-Uamha; SFS 114, Fergus' Shelter; and SFS 2, Crowlin 1. All but SFS 6, Ashaig 1, are caves or rockshelters.

In addition, Torrin site 1, period 2 probably dates to this period. This comprises the hearth and mound at the heart of a large charcoal mound which was sealed by a turf covering, itself sealed by the earliest phase of the stone shieling structure ([Wildgoose 1991](#)). Other probable dates from this period come from the circular cell (C4) at Tungadale ([Miket 2002](#)) which has been inserted into homestead (L4), and the pine joists from Caisteal Maol, Kyleakin, Strath ([Miket & Roberts 1990](#)).

4.6.18 Probably between AD 1500 and 1750

At SFS 99, Clachan Church there are dates relating to this period on charred hazelnut shell and mammal bone from the midden below the church. Other SFS dated sites at this time are the rockshelters at SFS 66, Ard Clais Salacher 2; SFS 41, Toscaig 9; SFS 68, Allt na Criche; and SFS 2, Crowlin 1, as well as the collapsed sea cave at SFS 22, Crowlin 3. The date from the midden at Crowlin 1 was taken from a pointed tool of deer bone.

4.6.19 Probably between AD 1750 and the present

The most recent dates in the project were all from charred hazelnut shell and come from the sea cave at SFS 22, Crowlin 3, the large rockshelter at SFS 26, Crowlin 7, and the midden at SFS 99, Clachan Church.

4.7 Discussion

These results confirm that the Inner Sound has provided a focus for human activity from the earliest times up to the present day. The Mesolithic dates from Sand add to a growing body of evidence for activity in the area in the late 7th millennium. Current evidence suggests that the initial occupation of the area is likely to have taken place in the mid 8th millennium BC, though only one site has so far produced dates of this period: Kinloch on Rùm ([Wickham-Jones 1990](#)). By the 7th millennium BC there are dates from Camas Daraich ([Wickham-Jones & Hardy 2004](#)), SFS 1, An Corran ([Hardy *et al* forthcoming](#); see [Table 175](#), above) in Skye, and SFS 8, Loch a Sguirr in Raasay, as well as more dates from Kinloch and Sand. Five sites do not provide much evidence for a millennium of occupation, but all fall within a restricted geographical area: the Inner Sound and adjacent islands. Together the dates and archaeological information are beginning to flesh out knowledge of the early settlement of this part of west coast Scotland ([Section 9](#)).

Further afield, after a start around 7500 cal BC there is an apparent peak in the use of Scottish shell middens around 6500 cal BC ([Ashmore 2004a:88](#)). The activity around the Oronsay middens probably starts around that time, and peaks, after a gap, around 4400 cal BC. However, there are still relatively few midden sites, and thus relatively few dates relating to them. The distribution of dated examples is heavily biased to Argyll and the Forth Valley. Sea-level changes have probably led to the loss of early coastal middens at least in the east of Scotland. Most of the dates come from marine shell, and recent research suggests that the currently applied correction to shell dates to allow for the marine effect may well be wrong ([Ascough *et al* 2004](#)). Therefore it is important that caution be used in the interpretation of these dates for the time being ([Ashmore 2004a:88–9&91](#)).

The dating evidence from SFS work, such as it is, contributes substantially to this pattern of mid 7th millennium use of shell middens, but also to the apparent decline in dated sites in the earlier 6th millennium. Not only is there a lack of dates from Sand at this time, there are no other dates from elsewhere. Although it is possible that the site at Sand was abandoned for a time, it might equally relate to the areas of site that were sampled for dating. Elsewhere it is important to ask whether this lack of dates reflects a sampling bias in the research work (are we looking for sites in the wrong places – suggesting a shift in settlement patterns), or was there a decline in population? Broad-based studies such as SFS provide one approach to the problem though as yet the work in the Inner Sound can provide no hard and fast answer. There are, for example, a number of sites which, though producing Mesolithic lithic assemblages did not yield material suitable for dating.

SFS also revealed little activity around the Inner Sound from the 6th into the 3rd millennium BC. Further work is necessary to reveal whether the concentration on caves and rockshelters as well as sites with visible lithics and midden captured all aspects of human activity.

In the years leading to the 1st millennium BC there is a small but steady amount of information, which then increases slowly to the present day. It is important to remember that many sites were not dated, especially those yielding obvious evidence of activity from historic times.

One side effect of the project has been an important cautionary caveat to the conventional assignments of period to a site. Not only does it seem that the application of simple period definitions is no longer useful, in addition it is interesting to note that, though many of the

caves and rockshelters had both midden and lithics, these were not necessarily prehistoric. Even the lithics often appear to relate to later ad hoc use of a ubiquitous resource. Flint flakes had an obvious use as strike-a-lights into recent times, but it seems that they might also be used for their sharp edges.

Together the dates provide an interesting sequence of human activity from the most distant human past of the area, into recent times. There is an obvious weakness in the lack of detailed information from many sites, but even the small amount of information available extends our knowledge of the area considerably. More importantly they provide a sound data base which is now available to be picked up by specialists who wish to increase knowledge of any one of several periods.

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