

## Appendices

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context	lab ref.	<sup>14</sup> C uncal bp	cal BC
2	AA-50698	3615+/-?	2150-1770
5	OxA-10177	6485+/-55	5540-5320
5	OxA-10176	6605+/-50	5639-5470
2	OxA-10175	7825+/-55	7050-6450
2	OxA-10384	7855+/-60	7050-6500

i Dating evidence from the 2000 excavations at Sand, taken from Hardy and Wickham-Jones 2001:125

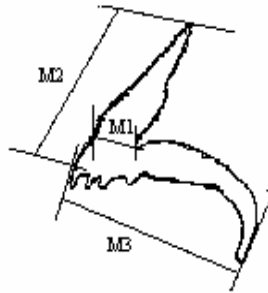
context number used in this report	context description	context numbers	area
1	topsoil and turf (incomplete)	1, 1/2, 1/3 13, 11, 12, 13/23,	all
2	main shell midden	13/24, 13/23/24, 24	B1, B2, B3
3	palaeo-channel and below	5, 14, 14/21	B3
4	slopewash over palaeo-channel	7/8	B3
5	lower organic rich silt (below midden)	22, 25	A and B3 (in A midden has slumped over this)
6	shell midden	28, 27	A
7	sandy soil with heat cracked stone	17, 29, 17/27	A
8	natural	21, 26	all

ii Context numbering and descriptions

Dentary measurement



Premaxilla measurements



Scapula measurement



iii Labrid maxilla, premaxilla and scapula measurements (based on *Labrus bergylta*), the left lateral view is shown. All other measurements used for labrids follow those defined in the York protocol.

<b>Element</b>	<b>Taxon</b>	<b>Context</b>	<b>Boneid</b>	<b>Measurements</b>			
<b>astragalus</b>				<b>Bd</b>	<b>DI</b>	<b>GLI</b>	<b>GLm</b>
	red deer	2	SFS4-2000	35.44	25.91	54.05	50.65
<b>calcaneum</b>				<b>C+D</b>	<b>GL</b>		
	red deer	1	SFS4-3120	37.82	109.9		
<b>humerus</b>				<b>BT</b>			
	red deer	5	SFS4-1800	48.3			
<b>metapodial</b>				<b>Bd</b>			
	red deer						
		2	SFS4-12	36.39			
		2	SFS4-1928	45.85			
		2	SFS4-1965	46.88			
		5	SFS4-329	40.84			
		5	SFS4-5967	39.85			
<b>phalanx 1</b>				<b>GL</b>	<b>LI</b>		
	red deer						
		2	SFS4-1820	24	25.23		
		2	SFS4-5854	26.9			
		2	SFS4-5855	27.2			
<b>radius</b>				<b>Bp</b>	<b>Bd</b>		
	red deer						
		2	SFS4-1998		53.92		
		2	SFS4-7	55.76			
	wild boar						
		2	SFS4-1835		39.42		
<b>scapula</b>				<b>GLP</b>			
	large mammal						
		2	SFS4-5852	63.12			

tibia

Bd

red deer 2 SFS4-1917 36.32

iv Mammal measurements

Element	Taxon	Context	Bone ID	M1	M2	M3	M4
Carpometacarpus				GL	Bp	Did	L
	Guillemot	2	SFS4-3911			6.75	
		2	SFS4-3912			6.97	
		2	SFS4-4174			6.46	
		1	SFS4-4638		10.35		
		2	SFS4-4988	40.56	10.68		
	Guillemot?	2	SFS4-3909		9.95	6.32	
		2	SFS4-3910		11.85		
		2	SFS4-3935		10.23		
		2	SFS4-3935				
		2	SFS4-4175		9.39		
	Razorbill/ Guillemot	1	SFS4-3959		9.31		
		2	SFS4-4002			5.65	
		2	SFS4-4068		8.79		
		2	SFS4-4069			6.53	
		2	SFS4-4070			6.08	
		2	SFS4-4098		9.75		
		2	SFS4-4141		9.32		
		2	SFS4-4204	40.52	10.64	6.2	40.06
		2	SFS4-4205		9.51		
		2	SFS4-4206			6.6	
		2	SFS4-4207		10.15		
		2	SFS4-4209			6.72	
		2	SFS4-4416			6.23	
		5	SFS4-4521		10.82		
		5	SFS4-4522			6.8	
		2	SFS4-4543		9.7		
		2	SFS4-4545			6.1	
		2	SFS4-4556		9.61		
		2	SFS4-4629			6.47	
		1	SFS4-4640			7.13	
		1	SFS4-4642			6.52	
		1	SFS4-4675		9.94		
		1	SFS4-4698			7.25	
		2	SFS4-4742		9.99	6.49	
		2	SFS4-4761			6.91	
		2	SFS4-4788		10.97		

	2	SFS4-4811			7.04
	2	SFS4-4880	10.91		
	1	SFS4-4897			6.69
	1	SFS4-4899			7.16
	1	SFS4-4900	10.69		
	1	SFS4-4901			6.74
	2	SFS4-4915			6.23
	2	SFS4-4918			7.07
	2	SFS4-5068	10.73		
	2	SFS4-5069	9.46		
	2	SFS4-5071	10.2		
	2	SFS4-5132			6.68
	5	SFS4-5141			6.66
	1	SFS4-5238	10.31		
	1	SFS4-5249			6.25
	6	SFS4-5310	10.29		
	7	SFS4-5547	10.29		
	2	SFS4-5744	9.41		
	2	SFS4-5747	10.09		
		Great Auk			
	2	SFS4-5291	13.66		
		Auk Family			
	1	SFS4-3955	8.56		
	2	SFS4-4603			7.39
	2	SFS4-5101			7.27
<b>Coracoid</b>			<b>GL</b>	<b>BF</b>	<b>Bb</b> <b>Lm</b>
		Razorbill?			
	2	SFS4-3853	36.69	12.8	35.95
		Razorbill/ Guillemot			
	2	SFS4-4003	38.26		
	2	SFS4-4823	35.56		35.29
<b>Humerus</b>			<b>GL</b>	<b>SC</b>	<b>Bp</b> <b>Bd</b>
		Guillemot			
	1	SFS4-3951	11.75		
	1	SFS4-3952	11.41		
	1	SFS4-3969	11.38		
	2	SFS4-4085	10.43		
	2	SFS4-4190	83.19	7.25	18.26
	2	SFS4-4193	11.24		
	2	SFS4-4408	11.14		
	2	SFS4-4409	9.78		
	2	SFS4-4483	11.49		

	2	SFS4-4554	81.66	6.91	16.85	8.17
	2	SFS4-4612	8.88			
	2	SFS4-4614	9.26			
	1	SFS4-4634	11.4			
	1	SFS4-4635	11.36			
	2	SFS4-4658	11.25			
	2	SFS4-4752	10.04			
	2	SFS4-4753	10.27			
	2	SFS4-4786	9.02			
	2	SFS4-4821	10.2			
	2	SFS4-4835	9.21			
	2	SFS4-4906	10.38			
	2	SFS4-5054	77.54	7	16.99	10.76
	2	SFS4-5157	82.12	16.87	8.7	
	1	SFS4-5185	10.21			
	1	SFS4-5186	10.09			
	2	SFS4-5214	9.25			
	2	SFS4-5223	81.63	17.68	9.13	
	1	SFS4-5231	9.76			
	5	SFS4-5276	9.77			
	2	SFS4-5305	17.5	10.14		
	2	SFS4-5754	10.52			
	1	SFS4-5760	10.08			
	2	SFS4-5763	10.4			
Guillemot?						
	2	SFS4-3981	16.61			
	2	SFS4-3985	11.47			
	2	SFS4-3985	11.48			
	2	SFS4-4192	17.8			
Razorbill						
	2	SFS4-4042	67.85	6.44	16.34	
	2	SFS4-4609	8.21			
	2	SFS4-4657	9.63			
	1	SFS4-4699	70.28	6.65	16.7	9.04
	2	SFS4-4751	9.51			
	2	SFS4-4907	9.07			
	2	SFS4-5061	9.56			
	2	SFS4-5062	9.16			
	2	SFS4-5755	8.78			
Razorbill/Guillemot						
	1	SFS4-3882	15.63			
	2	SFS4-3888	17.01			
	2	SFS4-3889	16.38			
	2	SFS4-3891	10.26			
	2	SFS4-3980	17.87			
	2	SFS4-3982	11.22			
	2	SFS4-4140	17.22			
	2	SFS4-4191	16.99			

2	SFS4-4257	16.57	
1	SFS4-4261	11.37	
5	SFS4-4377	9.66	
2	SFS4-4555	17.34	
2	SFS4-4608	17.99	
2	SFS4-4613	15.19	
1	SFS4-4633	17.05	
2	SFS4-4656	17.65	
2	SFS4-4719	17.16	
2	SFS4-4721	17.44	
2	SFS4-4724	7.93	
2	SFS4-4837	16.39	
2	SFS4-4881	8.75	
2	SFS4-4941	17.85	
2	SFS4-4942	8.45	
1	SFS4-4984	10.48	
2	SFS4-4987	17.68	
2	SFS4-4996	9.41	
2	SFS4-5053	10.04	
2	SFS4-5055	16.83	
2	SFS4-5056	16.81	
2	SFS4-5057	16.67	
2	SFS4-5110	18.57	
2	SFS4-5195	58.57	8.13
2	SFS4-5212	15	
2	SFS4-5601	9.89	
5	SFS4-5615	16.73	

Great auk

2	SFS4-4138	9.21	
2	SFS4-4620	11.49	
2	SFS4-5334	11.96	

Auk family

2	SFS4-3983	12.15	
2	SFS4-4043	6.53	
5	SFS4-4510	8.17	
1	SFS4-4637	10.48	

Thrush & chat family

2	SFS4-5655	6.86	
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**Scapula**

**GLP    SLC    Dic    GL**

Guillemot?

2	SFS4-3997		11.52	
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Razorbill/ Guillemot

2	SFS4-3860		11.04	
2	SFS4-3860			

2	SFS4-3914	10.42
2	SFS4-3915	10.62
2	SFS4-3998	10.7
2	SFS4-3999	9.84
2	SFS4-4060	10.53
2	SFS4-4061	11.22
2	SFS4-4061	11.19
2	SFS4-4143	11.12
2	SFS4-4185	11.12
2	SFS4-4211	11.29
1	SFS4-4236	9.92
1	SFS4-4237	10.91
1	SFS4-4262	10.94
5	SFS4-4381	10.75
5	SFS4-4382	9.76
5	SFS4-4401	9.93
5	SFS4-4523	11.34
2	SFS4-4606	9.62
2	SFS4-4627	10.61
2	SFS4-4663	11.23
2	SFS4-4664	11.26
2	SFS4-4665	11.24
2	SFS4-4666	11.09
5	SFS4-4706	10.6
2	SFS4-4738	10.86
2	SFS4-4759	11.76
2	SFS4-4798	10.73
5	SFS4-4874	10.82
2	SFS4-4910	8.9
2	SFS4-4911	10.35
2	SFS4-4952	10.78
1	SFS4-4991	11.46
2	SFS4-5017	10.18
2	SFS4-5046	10.82
2	SFS4-5064	10.33
2	SFS4-5065	10.93
2	SFS4-5087	10.84
2	SFS4-5118	9.55
2	SFS4-5119	10.02
2	SFS4-5120	9.26
5	SFS4-5142	10.42
1	SFS4-5209	9.5
1	SFS4-5327	10.78
2	SFS4-5364	11.23
2	SFS4-5365	10.55
7	SFS4-5374	10.1
2	SFS4-5391	11.25
1	SFS4-5428	11.63
2	SFS4-5442	10.54
7	SFS4-5489	11.04
2	SFS4-5539	11.43



	7	SFS4-5561				10.33
	2	SFS4-5742				10.8
	2	SFS4-5743				11.6
	2	SFS4-5796				10.7
	2	SFS4-5797				10.87
	2	SFS4-5808				10.71
		Great Auk				
	2	SFS4-4667				16.73
		Auk Family				
	1	SFS4-5252				11.06
	6	SFS4-5542				10.17
<b>Tarsometatarsus</b>			<b>GL</b>	<b>SC</b>	<b>Bp</b>	<b>Bd</b>
		Guillemot?				
	2	SFS4-4197	36.28	3.51	8	7.5
		Razorbill/ Guillemot				
	2	SFS4-4345			8.11	
<b>Tibiotarsus</b>			<b>GL</b>	<b>Bd</b>	<b>Dip</b>	<b>Dd</b>
		Razorbill/ Guillemot				
	1	SFS4-3884				5.49
	2	SFS4-4024		6.93		
	2	SFS4-4101			7.06	
	2	SFS4-4202		7.17		
	2	SFS4-4203		7.25		
	1	SFS4-4264		6.35		
	1	SFS4-4287		6.08		
	2	SFS4-4347		7.25		
	2	SFS4-4430		7.44		
	2	SFS4-4432		7.07		
	2	SFS4-4449		7.71		
	2	SFS4-4494		6.71		6.84
	2	SFS4-4564				7.48
	2	SFS4-4736		7.4		
	2	SFS4-4807		6.82		
	1	SFS4-4848		6.82		
	2	SFS4-4950		7.15		
	2	SFS4-4951		6.79		
	1	SFS4-5027		6.88		
	1	SFS4-5257		7.04		
	7	SFS4-5375		6.96		
	2	SFS4-5437		6.94		
	6	SFS4-5469		5.99		
	7	SFS4-5521		7.78		
	2	SFS4-5571		6.99		

2	SFS4-5741	7.31
1	SFS4-5804	7.15
2	SFS4-5818	7.56

Auk Family

1	SFS4-3956	6.75
6	SFS4-5312	6.24
2	SFS4-5739	6.06

v Bird measurements

Phase	bone ID	species	element	M1	M2	M3
1	SFS4-7763	g/p	qd	2.9		
1	SFS4-13716	gm	qd	3.23		
1	SFS4-13106	lbd	bo	2.96	3.45	
1	SFS4-6205	lbd	qd	3.06		
1	SFS4-6230	lbd	qd	2.47		
1	SFS4-12960	lbd	qd	2.37		
1	SFS4-7712	lbd	scp	1.54		
1	SFS4-13560	lbd1	o	2.96		
1	SFS4-7709	p	px	3.09		
1	SFS4-12911	p	px	3.27		
1	SFS4-13242	p	px	2.9		
1	SFS4-7189	pv	bo	2.99	3.76	
1	SFS4-7540	pv	bo	2.84	3.8	
1	SFS4-6157	pv	d	3.61	3.48	
1	SFS4-13012	pv	d		2.46	
1	SFS4-6132	pv	px	5.25		
1	SFS4-6156	pv	px	4.13		
1	SFS4-7155	pv	px	2.91		
1	SFS4-7482	pv	px	2.78		
1	SFS4-13130	pv	px	3.05		
1	SFS4-13220	pv	px	3.24	4.37	3.59
1	SFS4-13295	pv	px	2.98		
1	SFS4-6129	pv	qd	3.07		
1	SFS4-6130	pv	qd	3.61		
1	SFS4-6155	pv	qd	4.09		
1	SFS4-6167	pv	qd	2.92		
1	SFS4-6578	pv	qd	2.51		
1	SFS4-7134	pv	qd	3.75		
2	SFS4-7127	g/p	bo	11.75		
2	SFS4-708	g/p	d	1.92	2.5	
2	SFS4-2792	g/p	d	3.98		
2	SFS4-596	g/p	px	1.78		
2	SFS4-886	g/p	px	4.42		4.18
2	SFS4-1607	g/p	px	3.05	3.48	2.94
2	SFS4-2847	g/p	px	2.9		
2	SFS4-7305	g/p	px	3.68		
2	SFS4-1656	gad	bo	2.64	3.48	
2	SFS4-6886	gad	bo	3.68	4.82	
2	SFS4-12371	gad	bo	2.79	3.28	

2	SFS4-2684	gad	d		2.3	
2	SFS4-6848	gad	d	2.86		
2	SFS4-7024	gad	d	2.6		
2	SFS4-600	gad	px	0.93		
2	SFS4-706	gad	px	3.51		3.33
2	SFS4-770	gad	px	4.18		
2	SFS4-2880	gad	px	4.23		
2	SFS4-6141	gad	qd	2.6		
2	SFS4-6149	gad	qd	3.99		
2	SFS4-6826	gad	qd	2.22		
2	SFS4-7113	gm	bo		10.63	
2	SFS4-709	gm	d		1.71	
2	SFS4-819	gm	d	1.49	2.03	
2	SFS4-2915	gm	d	1.86		
2	SFS4-766	gm	px	4.55		4.96
2	SFS4-887	gm	px	3.71	3.15	3.69
2	SFS4-1029	gm	px	3.01	2.34	3.45
2	SFS4-2912	gm	px	4.2	4.91	4.01
2	SFS4-7201	gm	qd	10.05		
2	SFS4-7311	gm	qd	2.76		
2	SFS4-12415	gm	qd	3.67		
2	SFS4-1719	lbd	bo	3.08	3.14	
2	SFS4-1748	lbd	bo	2.76	3.04	
2	SFS4-2568	lbd	bo	3.18	3.21	
2	SFS4-2581	lbd	bo	4.76	5.26	
2	SFS4-2669	lbd	bo	3.09	3.78	
2	SFS4-2822	lbd	bo	5.04	5.21	
2	SFS4-2995	lbd	bo	2.47	2.72	
2	SFS4-6685	lbd	bo	3.03	3.44	
2	SFS4-6745	lbd	bo	3.15	3.8	
2	SFS4-6746	lbd	bo	3.57	3.77	
2	SFS4-6824	lbd	bo	3.24	3.04	
2	SFS4-6881	lbd	bo	5.18	5.23	
2	SFS4-7125	lbd	bo	4.92	5.37	
2	SFS4-7126	lbd	bo	4.78	4.77	
2	SFS4-1076	lbd	d	2.77	4.13	
2	SFS4-2755	lbd	d	3.86		
2	SFS4-2790	lbd	d	5.86		
2	SFS4-2888	lbd	d	6.88		
2	SFS4-986	lbd	px	3.07		
2	SFS4-1082	lbd	px	5.07		
2	SFS4-1118	lbd	px	3.72		
2	SFS4-1272	lbd	px	2.2	8.42	6.07
2	SFS4-1301	lbd	px	12.47		
2	SFS4-1542	lbd	px	3.09		
2	SFS4-1581	lbd	px	3.22		
2	SFS4-1582	lbd	px	3.53	17.38	11.37
2	SFS4-1741	lbd	px	4.15		
2	SFS4-6045	lbd	px	2.42	9.62	
2	SFS4-605	lbd	qd	3.71		
2	SFS4-1117	lbd	qd	3.59		

2	SFS4-1143	lbd	qd	3.08	
2	SFS4-1245	lbd	qd	4.11	
2	SFS4-1278	lbd	qd	4.65	
2	SFS4-1287	lbd	qd	4.18	
2	SFS4-1348	lbd	qd	3.15	
2	SFS4-1505	lbd	qd	2.88	
2	SFS4-1606	lbd	qd	2.05	
2	SFS4-2854	lbd	qd	4.22	
2	SFS4-2873	lbd	qd	3.66	
2	SFS4-6201	lbd	qd	2.26	
2	SFS4-6700	lbd	qd	4.75	
2	SFS4-7252	lbd	qd	2.2	
2	SFS4-7666	lbd	qd	2.31	
2	SFS4-11880	lbd	qd	3.31	
2	SFS4-11899	lbd	qd	2.65	
2	SFS4-11989	lbd	qd	2.3	
2	SFS4-12203	lbd	qd	2.59	
2	SFS4-12312	lbd	qd	3.03	
2	SFS4-12314	lbd	qd	2.52	
2	SFS4-6182	lbd	scp	1.74	
2	SFS4-7396	lbd	scp	1.53	
2	SFS4-12356	lbd	scp	2.06	
2	SFS4-13378	lbd	scp	1.58	
2	SFS4-12315	lbd1	qd	2.11	
2	SFS4-12196	lbd1	scp	2.04	
2	SFS4-12245	lbd1	scp	2.17	
2	SFS4-12342	lbd1	scp	2.36	
2	SFS4-6800	lbe	a	3.16	
2	SFS4-7100	lbe	a	2.41	
2	SFS4-7740	lbe	bo	4.73	5.57
2	SFS4-1246	lbe	d	5.26	
2	SFS4-1063	lbe	qd	4.83	
2	SFS4-2804	lbe	qd	6.2	
2	SFS4-6200	lbe	qd	6.77	
2	SFS4-6673	lbe	qd	3.32	
2	SFS4-6719	lbe	qd	3.85	
2	SFS4-6720	lbe	qd	3.67	
2	SFS4-7097	lbe	qd	5.81	
2	SFS4-12230	lbe	qd	4.62	
2	SFS4-12231	lbe	qd	4.96	
2	SFS4-12319	lbe	qd	5.99	
2	SFS4-12734	lbe	qd	3.96	
2	SFS4-12967	lbe	qd	3.7	
2	SFS4-12322	lbe	scp	2.61	
2	SFS4-901	lbe?	px	7.23	
2	SFS4-1619	lbe?	px	3.58	
2	SFS4-604	p	d	1.72	2.36
2	SFS4-1045	p	d		2.21
2	SFS4-1597	p	d	2.35	
2	SFS4-11586	p	ot		6.31
2	SFS4-11587	p	ot	10.21	3.77

2	SFS4-11588	p	ot		3.58	
2	SFS4-11591	p	ot		3.89	
2	SFS4-11594	p	ot		3.61	
2	SFS4-11598	p	ot		3.8	
2	SFS4-11599	p	ot	8.99	3.45	
2	SFS4-11600	p	ot		4.19	
2	SFS4-11603	p	ot		3.46	
2	SFS4-11605	p	ot	7.26	3.05	
2	SFS4-11616	p	ot		3.2	
2	SFS4-11617	p	ot		4.7	
2	SFS4-592	p	px	3.3	4.4	3.62
2	SFS4-595	p	px	1.82	4.35	3.95
2	SFS4-598	p	px	2.04		
2	SFS4-1220	p	px	3.24	3.6	2.89
2	SFS4-2690	p	px	2.36	3.6	2.36
2	SFS4-12234	p	px	2.92		
2	SFS4-12350	p	px	2.81		
2	SFS4-12961	p	px	3.3		
2	SFS4-880	pp	bo	3.04	3.19	
2	SFS4-1781	pp	bo		6.32	
2	SFS4-2844	pp	d	6.51		
2	SFS4-6093	pp	d	4.84	4.92	
2	SFS4-6179	pp	d		5.84	
2	SFS4-12253	pp	d	5.46		
2	SFS4-11585	pp	ot	13.63	5.2	
2	SFS4-11589	pp	ot		3.84	
2	SFS4-11593	pp	ot		3.81	
2	SFS4-11604	pp	ot		4.08	
2	SFS4-11606	pp	ot	8.51	3.44	
2	SFS4-888	pp	px	3.5		
2	SFS4-889	pp	px	3.4	4.02	2.71
2	SFS4-890	pp	px	2.45	1.58	2.58
2	SFS4-1038	pp	px	2.78		
2	SFS4-1040	pp	px	3.79		
2	SFS4-2631	pp	px	2.55		
2	SFS4-2924	pp	px	3.66	4.47	3.39
2	SFS4-2767	pp	qd	3.2		
2	SFS4-737	pv	bo	3.03	3.51	
2	SFS4-791	pv	bo	2.57	4.01	
2	SFS4-1049	pv	bo	3.05	3.31	
2	SFS4-6846	pv	bo	3.62	4.07	
2	SFS4-7313	pv	bo	2.82	3.46	
2	SFS4-1043	pv	d	1.82	2.49	
2	SFS4-1044	pv	d	1.64	2.32	
2	SFS4-7023	pv	d	4.52	4.69	
2	SFS4-7112	pv	d	4.09		
2	SFS4-7316	pv	d	2.86	2.48	
2	SFS4-7418	pv	d	2.88		
2	SFS4-12176	pv	d		2.55	
2	SFS4-6793	pv	ot		3.7	
2	SFS4-11590	pv	ot		4.12	

2	SFS4-11595	pv	ot		3.49	
2	SFS4-11596	pv	ot		4.02	
2	SFS4-11597	pv	ot		3.45	
2	SFS4-11601	pv	ot		3.99	
2	SFS4-11602	pv	ot		3.22	
2	SFS4-11607	pv	ot		3.37	
2	SFS4-11608	pv	ot		3.29	
2	SFS4-11609	pv	ot		3.61	
2	SFS4-11610	pv	ot		3.39	
2	SFS4-11611	pv	ot		3.99	
2	SFS4-11612	pv	ot	9.25	3.64	
2	SFS4-11614	pv	ot		3.28	
2	SFS4-11615	pv	ot		2.46	
2	SFS4-593	pv	px	2.39		3.25
2	SFS4-891	pv	px	2.72	4.13	2.72
2	SFS4-1030	pv	px	3.53	3.76	2.61
2	SFS4-1031	pv	px	2.41	3.02	2.12
2	SFS4-1032	pv	px	4.05		
2	SFS4-1035	pv	px	4.39		
2	SFS4-1036	pv	px	3.5	4.43	3.49
2	SFS4-1037	pv	px	3.19	4.05	3.04
2	SFS4-1039	pv	px	3.79	4.41	3.57
2	SFS4-1673	pv	px	3.43		
2	SFS4-6143	pv	px	3.41		
2	SFS4-6738	pv	px	2.45		
2	SFS4-6739	pv	px	2.42		
2	SFS4-6740	pv	px	2.58		
2	SFS4-6885	pv	px	3.77		
2	SFS4-6910	pv	px	3.42		
2	SFS4-6911	pv	px	3.08		
2	SFS4-7052	pv	px	3.16		
2	SFS4-7203	pv	px	7.43		
2	SFS4-7306	pv	px	2.6		
2	SFS4-7416	pv	px		4.43	3.16
2	SFS4-7417	pv	px	2.02	2.87	2.12
2	SFS4-12184	pv	px	4.05		
2	SFS4-13373	pv	px	2.62		
2	SFS4-6148	pv	qd	3.25		
2	SFS4-6697	pv	qd	3.57		
2	SFS4-6909	pv	qd	2.29		
2	SFS4-7069	pv	qd	2.09		
2	SFS4-7206	pv	qd	4.09		
2	SFS4-7312	pv	qd	3.96		
2	SFS4-7368	pv	qd	3.84		
2	SFS4-12177	pv	qd	3.29		
2	SFS4-1369	sym	qd	2.04		
2	SFS4-591	sym?	px	2.65		
2	SFS4-1720	sym?	qd	2.42		
2	SFS4-11584	tm	ot		4.37	
2	SFS4-654	uif	bo			
2	SFS4-1761	wt	px	2.42	3.7	2.39

5	SFS4-2158	lbd	qd	2.88		
5	SFS4-2244	lbd	qd	3.53		
5	SFS4-2219	lbe	qd	4.7		
5	SFS4-2393	p	px	3.35	4.34	3.47
6	SFS4-7609	lbd	bo	3.82	4.49	
6	SFS4-7673	lbd	bo	3.84	3.88	
6	SFS4-7594	lbd	qd	3.5		
6	SFS4-6236	lbe	qd	4.42		
7	SFS4-7632	g/p	px	2.93		
7	SFS4-7782	g/p	px	2.75		
7	SFS4-12014	gad	bo	1.55	2.01	
7	SFS4-7783	gm	px	4.41		
7	SFS4-7634	lbd	bo	3.68	3.83	
7	SFS4-6249	lbd	qd	3.08		
7	SFS4-6291	lbd	qd	1.63		
7	SFS4-6277	lbd	scp	1.92		
7	SFS4-7819	lbd	scp	2.05		
7	SFS4-6310	lbe	px	6.09	28.46	
7	SFS4-12114	p	ot		3.54	
7	SFS4-12120	p	ot		3.39	
7	SFS4-7633	pv	bo	3.02	4.23	
7	SFS4-7631	pv	px	2.41	3.83	2.29
unprov	SFS4-7193	pv	qd	6.13		

vi Fish measurements (see appendices viii and ix for definition of species and element abbreviations)

Texture	Definition
<b>Excellent</b>	majority of surface fresh or even slightly glossy; very localized flaky or powdery patches.
<b>Good</b>	lacks fresh appearance but solid; very localized flaky or powdery patches
<b>Fair</b>	surface solid in places, but flaky or powdery on up to 49% of specimen
<b>Poor</b>	surface flaky or powdery over >50% of specimen

vii York system surface texture categories

Abbreviation	Common name	Latin name
<b>Mammal</b>		
whale	whale sp.	unidentified whale
dog/wolf	dog /wolf	<i>Canis</i>
fox	fox	<i>Vulpes vulpes</i>
canid	dog family	Canidae
badger	badger	<i>Meles meles</i>
otter	otter	<i>Lutra lutra</i>
seal	seal sp.	check
wb	wild boar	<i>Sus scrofa</i>
red	red deer	<i>Cervus elaphus</i>
red?	red deer?	<i>Cervus elaphus</i>
roe	roe deer	<i>Capreolus capreolus</i>
roe?	roe deer	<i>Capreolus capreolus</i>
cervid	deer family	Cervidae
bos	<i>Bos</i> sp.	<i>Bos</i> sp.

sheep	sheep	<i>Ovis aries</i>
sh/g	sheep/goat	Caprine
lm	large mammal	
mm1	medium mammal 1	
mm2	medium mammal 2	
uim	unidentified mammal	
<b>Bird</b>		
pc/s	cormorant or shag	<i>Phalacrocorax carbo/aristotelis</i>
at	razorbill	<i>Alca torda</i>
ua	guillemot	<i>Uria aalge</i>
auk	little auk	<i>Alle alle</i>
fa?	puffin?	<i>Fratercula arctica</i>
pi	great auk	<i>Pinguinus impennis</i>
ald	auk family	Alcidae
trdd	thrush and chat family	Turdidae
uib	unidentified bird	
<b>Fish</b>		
gal	tope shark	<i>Galeorhinus galeus</i>
dgf	dogfish families	Scyliorhinidae/Squalidae
rjd	ray family	Rajidae
elas	elasmobranch	elasmobranch
ch	herring	<i>Clupea harengus</i>
aa	eel	<i>Anguilla anguilla</i>
aa?	eel?	<i>Anguilla anguilla?</i>
sld	salmon family	Salmonidae
rk	rockling sp.	<i>Ciliata/Gaidropsarus</i>
pv	saithe	<i>Pollchius virens</i>
pp	pollack	<i>Pollachius pollachius</i>
p	saithe/pollack	<i>Pollachius</i>
gm	cod	<i>Gadus morhua</i>
g/p	cod/saithe/pollack	<i>Gadus/Pollachius</i>
ma	haddock	<i>Melanogrammus aeglefinus</i>
ma?	haddock?	<i>Melanogrammus aeglefinus?</i>
wt	whiting	<i>Merlangius merlangus</i>
wt?	whiting?	<i>Merlangius merlangus</i>
trs	Norway pout/bib/poor cod	<i>Trisopterus</i>
gad	cod family	Gadidae
trd	gurnard family	Triglidae
ctd	scorpion fish family	Cottidae
tt	Atlantic horse mackerel	<i>Trachurus trachurus</i>
tt?	Atlantic horse mackerel?	<i>Trachurus trachurus?</i>
spd	sea bream family	Sparidae
spd?	sea bream family?	Sparidae?
sym	corkwing wrasse	<i>Symphodus (Crenilabrus) melops</i>
sym?	corkwing wrasse?	<i>Symphodus (Crenilabrus) melops?</i>
ctr	goldsinny	<i>Ctenolabrus rupestris</i>
lbd2	corkwing wrasse/goldsinny	<i>Symphodus (Crenilabrus) melops/ Ctenolabrus rupestris</i>
lbe	ballan wrasse	<i>Labrus bergylta</i>
lbe?	ballan wrasse?	<i>Labrus bergylta?</i>
lbi	cuckoo wrasse	<i>Labrus bimaculatus</i>
lbi?	cuckoo wrasse?	<i>Labrus bimaculatus?</i>
lbd1	ballan wrasse/cuckoo wrasse	<i>Labrus bergylta/ Labrus bimaculatus</i>
lbd	wrasse family	Labridae
zod	eelpout family	Zoarcidae
pg	butterfish	<i>Pholis gunnellus</i>
amd	sandeel family	Ammodytidae
ss	Atlantic mackerel	<i>Scomber scombus</i>



pec	perch order	Perciformes
pl	plaice	<i>Pleuronectes platessa</i>
pld	plaice family	Pleuronectidae
het	flatfish order	Heterosomata (Pleuronectiformes)
uif	unidentified fish	

viii Nomenclature and species abbreviations used in the text

<b>Abbreviation</b>	<b>Element</b>
<b>Mammal</b>	
astr	astragalus
calc	calcaneum
fem	femur
hum	humerus
m/c	metacarpal
m/t	metatarsal
m/p	metapodials
mand	mandible
pel	pelvis
phal	phalanx
phal1	phalanx 1
phal2	phalanx 2
phal3	phalanx 3
rad	radius
rad/uln	radioulna
scap	scapula
tib	tibia
ulna	ulna
<b>Bird</b>	
carpo	carpometacarpus
coraB	coracoid
fem	femur
humB	humerus
scap	scapula
tarso	tarsometatarsus
tibio	tibiotarsus
ulnaB	ulna
<b>Fish</b>	
a	articular
bo	basioccipital
ch	ceratohyal
cl	cleithrum
d	dentary
hy	hymandibular
iph	infrapharyngeal
mx	maxilla
o	opercular
pa	palatine
par	parasphenoid
po	preopercular
pt	posttemporal
px	premaxilla
qd	quadrate
scl	supracleithrum
scp	scapula

vo	vomer
fv	first vertebrae
av	abdominal vertebra
av1	abdominal vertebra 1
av2	abdominal vertebra 2
av3	abdominal vertebra 3
cv	caudal vertebra
cv1	caudal vertebra 1
cv2	caudal vertebra 2
puv	penultimate vertebra
uv	ultimate vertebra
mvc	mineralised vertebral centrum
v	vertebrae

ix Element abbreviations used in the text