

Ancient Monuments Laboratory  
Report 22/92

ISLES OF SCILLY: ASSESSMENT OF  
ENVIRONMENTAL POTENTIAL OF SITES  
AT PORTH KILLIER, ST AGNES, SAMSON,  
TEAN AND ST MARY'S

Vanessa Straker

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Summary

Samples of prehistoric settlements, a Romano-British midden and Civil War Battery were assessed for their environmental potential as part of the regular monitoring of eroding coastal sites by the Cornwall Archaeological Unit. The range of biological material present is listed for each site, but the analytical work describes charred plant macrofossils only. These are the first plant macrofossil assemblages to be recovered from Scilly and demonstrate its rich potential.

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# ISLES OF SCILLY: ASSESSMENT OF ENVIRONMENTAL POTENTIAL OF SITES AT PORTH KILLIER, ST AGNES, SAMSON, TEAN AND ST MARY'S

Vanessa Straker

## 1.0 INTRODUCTION

Samples were collected from coastal exposures on the Islands of St Agnes, Tean, Samson and St. Mary's during the recording work being carried out by the Cornwall Archaeological Unit.

All the samples were processed in a flotation tank at the Department of Geography, University of Bristol. The floats were collected in a 250 micron sieve and the residues on a 500 micron nylon mesh. Both were sorted through completely. Details of sample size and types of biological material present in the deposits are listed in the summary Tables for each site (Tables 1-4A). The plant macrofossils are listed in Tables 1-4B. Unless specified, the macrofossils are 'seeds', although in strict botanical terms they include both fruits and seeds. Classification follows Clapham *et al.*, 1987.

The animal bones from Porth Killier and Tean have been reported upon by Dr Frank Turk (1991).

## 2.0 THE SITES

### 2.1 Porth Killier, St Agnes PRN 7029 (1989) TABLES 1A, 1B

The section exposed in the cliff shows the remains of the wall of a hut and several limpet middens which are presumed to be Bronze Age. Bulk samples were taken from the top and bottom of the middens, a smaller midden apparently within the wall of the hut and several other layers identified in the exposed section.

### Results

Bird, fish and mammal bones were present in all the samples in small quantities and have been identified by Dr Turk (1991). All the samples except those from context 4 contained large numbers of limpet shells. These have been weighed but not studied further. Very little wood charcoal was present but other charred plant macrofossils were recovered from all deposits except 1(b).

The only cultivated plant identified was barley, it was not well preserved but a single grain could definitely be attributed to the hulled variety. No grains with a twisted ventral furrow were identified making it probable that the two-row rather than six-row form was grown.

Most of the wild species present could grow as arable weeds, in particular the chickweeds, fat hen, red goosefoot, black bindweed and small nettle. Red goosefoot is also more common in coastal locations. The *Raphanus* (radish) could either belong to the subspecies *maritimus* which is a common coastal plant, or *iraphanistrum* which is an arable weed, particularly on calcareous soils.

A heathland element is also present suggesting that some acid soils had developed over the granite. This flora consists of flowers and fruits of heather (*Erica*, and possibly also *Calluna*), bracken, and sheep's sorrell.

The presence of ploughman's spikenard (*Inula*) indicates that more calcareous soils had also developed, perhaps in areas where shelly sand had accumulated.

The presence of stinging nettle could indicate nutrient enriched conditions such as the presence of dung and domestic waste in the settlement area. There are a few seeds of sedges and rushes which suggest the collection of plants from damp conditions, perhaps for use as flooring or roofing material. A number of seeds of clover (*Trifolium*) were present but could not be identified to species. However, most species grow in grassy places and some will also grow on sand dunes.

The fact that mineralised seeds of dock and stinging nettle are also present adds an extra dimension to the flora as these are seeds of plants that did not have to come into contact with fire to be preserved in unwaterlogged conditions. The process of mineralisation involves the replacement of the plant tissue with calcium carbonate (or phosphate) and is often observed in Roman and medieval cess pits, though mineralised seeds were identified from the Bronze Age midden at Potterne, Wiltshire (Carruthers, forthcoming). At Porth Killier, the large numbers of limpets may have provided the source of calcium carbonate and animal dung may also have been present.

## 2.2 Tean, West side of East Porth PRN 7111.01 (1989) TABLES 2A,2B

Three bulk samples were taken from a Romano-British midden which is the most badly eroding part of a multi-period site excavated by Charles Thomas in 1956.

Bones and limpets were found in all the samples and fragments of scallops and possibly periwinkles were also present.

The middle sample (2) had the highest density of charred plant macrofossils, but the samples were markedly different from each other in composition. 1 contained only oats which were probably wild rather than cultivated, but without the presence of floret bases this cannot be assumed despite their small size. The middle sample contained barley, possibly oats and a variety of weed species similar to but more restricted in range than those from Porth Killier. The lowest sample contained some arable weeds (eg. fat hen) and barley but also produced three grains of wheat. No chaff was found and the grains were poorly preserved, so it is not known whether emmer, spelt or bread wheat is represented.

## 2.3 Samson (1990) TABLES 3A,3B

Bulk samples were taken from the remains of occupation and post occupation layers within a (presumed) Bronze Age hut on the west side of North Hill (West Porth) (PRN 7070 contexts 8 and 1) and from an exposed section of Old Land Surface associated with prehistoric field walls on the south side of East Porth (Ratcliffe and Sharpe 1991).

Fragments of bone were only present in one sample but the other two samples contained large numbers of charred plant macrofossils (charcoal and seeds).

The post occupation layer contained a single unidentifiable cereal grain, but the occupation layer (8) within the hut contained barley grain, some of which can be identified as the naked form, and chaff. The chaff consists of rachis internodes of six-row barley which have stalked lateral spikelets. Stalked lateral spikelets are often found in naked barley populations (Jacomet 1987) but can also be found occasionally in hulled barley. The same deposit also contained small numbers of wheat grains and glume bases, the latter identified as *T.dicocum*, emmer wheat. A single celtic bean was recovered from the residue, emphasising the importance of checking this fraction thoroughly. The weed flora was not very diverse and was dominated by fat hen and grasses with red goosefoot and knotgrass also present. The presence of corn spurrey (*Spergula arvensis*) which does not grow in soils where there is free calcium carbonate does imply that the soils the crops were grown on were acidic rather than calcareous. Present day soils developed on the granite are acid except where the presence of sand containing shell fragments has altered the balance.

A single mineralised seed was present even though the conditions thought necessary for mineralisation do not appear to have been particularly favourable as bone and shellfish are largely absent.

The sample of burnt material from the old ground surface buried by sand (PRN 7077.01) appears to be a cache of almost pure cleaned barley. At least half the grain can be identified as naked barley probably of both two and six rowed forms. A small amount of hulled barley was present, but a large number of grains were too poorly preserved for close identification.

Naked barley differs from the hulled form in that the chaff (lemma and palea) does not enclose the grain tightly and the grains are easily released from these protective membranes. In hulled barley the lemma and palea surround the grain often even after the ear has been broken up and the rest of the chaff removed. Grains of hulled barley are usually more angular than the naked form which is rounded in cross-section and bears a

fine transverse wrinkling on its surface. No chaff was preserved in this deposit and weeds consisted of a single seed of spike-rush (*Eleocharis S. Palustres*) and one other too poorly preserved for identification. The sample therefore is most likely to be part of a cleaned crop of mainly naked barley. While impressions of cereals in pottery have suggested that naked barley should be common in Bronze Age deposits (Helbaek, 1952), actual finds of this form of the cereal are not frequent. Recently however, naked barley was found at Trethellan Farm in Cornwall (Straker 1990) and also at Rowden in Dorset (Carruthers 1991). The Rowden sample consists of a large cache of pure naked barley which, like the Samson find suggests a single episode of burning. The dimensions of the Trethellan and Rowden grain are very similar and noticeably smaller than finds from mainland Europe. Measurements made of the Samson grain are given below and compare closely with those from the other two British sites.

		length		breadth	width
Samson n=50	max.	4.6		3.1	2.8
	mean	4.14		2.77	2.09
	min.	3.3		1.7	1.5
Trethellan n=50	max.	5.1	3.5	2.6	
	mean	4.35		2.61	2.1
	min.	3.8		2.0	1.5
Rowden n=300	max.	5.3		3.5	3.1
	mean	4.3		2.6	2.0
	min.	3.2		1.6	1.3

At Rowden and Trethellan, celtic bean was also recorded, as it was on Samson emphasising the importance of this protein-rich crop in the Bronze Age. It is most likely that the barley and beans would have been spring sown crops.

#### 2.4 St Mary's, Steval Point TABLES 4A,4B

This is a single sample composed of burnt plant material from a Civil War Battery (Parkes, 1990).

Hulled barley and a single fragment of a wheat grain were accompanied by arable weeds such as corn marigold and thistle, but much of the sample contained a heathland flora of heather, gorse and bracken similar to that found in places on St Mary's today. The only other plants that may have been food remains were large poorly preserved legumes that were vetches or peas.

### 3. COMMENTS

The plant macrofossils described in this report are though to be the first to be recovered from Scilly although cereal pollen has been noted in pollen diagrams from the Islands in the past (Scaife 1983). The fact that both mineralised and charred seeds are present demonstrates the potential of future archaeobotanical work and emphasises that care will need to be taken in designing appropriate methods of sampling for and recovery during excavation.

The finding of a quantity of small-seeded naked barley on Samson adds weight to the suggestion that this variety was probably a crop in its own right in the middle Bronze Age. In other areas it tends to be replaced by hulled barley in the late Bronze Age, but without a sequence of well dated samples, we cannot be certain that this is also the case for Scilly. The reason for the shift in cultivation from naked to hulled barley is not clear but one possibility is that hulled barley is better suited to winter sowing than the naked form.

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TABLE 1A ISLES OF SCILLY: ASSESSMENT OF ENVIRONMENTAL SAMPLES FROM ST AGNES, PORTH KILLIER								
SUMMARY								
				SAMPLES				
	1(b)	2 BTM	2 TOP	3 BTM	3 TOP	4/4	4/5	4/6
weight processed (kg)	4	25.7	24.6	15.5	15.8	14.4	14.3	5.3
volume processed (litres)	3	22	20	14	14	12	11	3
bone, fish + mammal (weight in kg)	0.025	0.1	0.15	0.06	0.15	0.006	0.075	0.09
shellfish (mostly limpets) (weight in kg)	0.175	3	2.1	3.1	2.8	0	0	0
plant macrofossils (nos seeds/grain)	0	175	74	122	168	78	42	12
no. seeds/litre	0	7.9	3.7	8.7	12	6.5	3.8	4
preservation by mineralisation		+		+	+			

TABLE 1B PORTH KILLIER, PLANT MACROFOSSILS									
TAXON	COMMON NAME		SAMPL ES						
			2 BTM	2 TOP	3 BTM	3 TOP	4/4	4/5	4/6
Hordeum sp.	barley	grain	12(+3)	12	14	8	18	6	5
Hordeum sp.	barley	straight grain	0	6	0	5	14	0	
Hordeum sp.	barley	hulled grain		1	0	0	0	0	
Cereals (indeterminate)			1(+30)	1(20)	1(+9)	9(+)	(+30)	1(+6)	(+)
CRUCIFERAE									
Raphanus raphanistrum /maritimus	wild/sea radish	seed	1						
Raphanus raphanistrum /maritimus		pod fragments		1					
HYPERICACEAE									
Hypericum sp.	St. John's wort		1			1			
CARYOPHYLLACEAE									
Cerastium sp.	chickweed			1	3				
Stellaria media group	chickweed		2			2,1m		1	
gen. et sp. indet.				2			1		
PORTULACACEAE									
Montia sp.	blinks		12	4	4	6		1	
CHENOPODIACEAE									
Chenopodium album L.	fat hen		39	30	34	24	20	20	
Chenopodium rubrum L.	red goosefoot								
Chenopodium cf. rubrum L.	cf red goosefoot		1					2	
Chenopodium spp.	goosefoots				7				
Chenopodium sp.	goosefoot						1		1
gen. et sp. indet.			1				1		
LEGUMINOSAE									
Trifolium sp.	clover						1	2	
Trifolium sp(p)	clover(s)								5
Trifolium spp.	clovers		25	4					

TABLE 1B PORTH KILLIER, PLANT MACROFOSSILS, cont.

			2 BTM	2 TOP	3 BTM	3 TOP	4/4	4/5	4/6
Trifolium/Medicago sp.				1	5				
Rosaceae spine			1		1				
POLYGONACEAE									
Polygonum lapathifolium L.	pale persicaria					1			
Fallopia convolvulus (L.) Love	black bindweed				3	2	1		
Rumex cf. acetosella group	sheep's sorrel		6						
Rumex sp.	sorrel		2	1		2,1m	1		
gen. et sp. indet.			2		3				
URTICACEAE									
Urtica urens L.	small nettle				1				
Urtica dioica L.	stinging nettle		2m			1m			
ERICACEAE									
Calluna/Erica flowers	heather		6			1	1		
Erica sp. fruit	heather			1	1				
Erica sp. seeds	heather				2	50			
COMPOSITAE									
Inula cf. conyzia DC.	ploughman's spikenard		1						
cf. Anthemis cotula L.	cf. stinking mayweed						1		
JUNCACEAE									
Juncus sp(p)	rush(es)								
CYPERACEAE									
Carex sp.	sedge			1	2	1		1	
gen. et sp. indet.			1						1
GRAMINEAE									
gen. et sp. indet.	grass	spikelet				1			
gen. et sp. indet.	grasses	seeds	34			25	6		
unidentified seeds "A"			5		21	12			
unidentified seeds			20	8	20	14,1m	12	8	1
TOTAL			175	74	122	168	78	42	21
Pteridium aquilinum (L.) Kuhn	bracken	pinnules	1						
KEY: (+) - fragments, m - mineralised									

TABLE 2A ISLES OF SCILLY : ASSESSMENT OF ENVIRONMENTAL SAMPLES FROM TEAN			
		SAMPLES	
	1	2	3
weight processed (kg)	4.45	12.5	6.8
volume processed (litres)	4	8	6
bone, fish + mammal (weight in kg)	0.05	0.15	.075
shellfish (mostly limpets) "	0.075	1.3	.075
other molluscs		+	+
plant macrofossils (nos. seeds/grain)	15	66	23
no. seeds/litre	3.8	8.4	3.8

TABLE 2B TEAN, PLANT MACROFOSSILS					
				SAMPLES	
TAXON			1	2	3
Hordeum sp.	grain	barley		14	12
Triticum sp(p)	grain	wheat			3
cf. Avena sp.	grain	cf. oats		2	
Avena sp.	grain	oats	15		
Cereal sp. indeterminate				10(+)	4(+)
CRUCIFERAE					
Raphanus raphanistrum/maritimum	pod segment	wild/sea radish		1	
CARYOPHYLLACEAE					
gen. et sp. indet.				1	
CHENOPODIACEAE					
Chenopodium album L.		fat hen		2	1
Chenopodium sp.				1	
gen. et sp. indet.					1
LEGUMINOSAE					
Vicia/Lathyrus spp.		vetch/tare		11	
POLYGONACEAE					
Polygonum aviculare group		knotgrass		1	
Rumex sp.		sorrel		1	
GRAMINEAE					
gen. et sp. indet.				15	2
unidentified seeds				7	
TOTAL			15	66	23

Key as for TABLE 1B

TABLE 3A

ISLES OF SCILLY : ASSESSMENT OF ENVIRONMENTAL SAMPLES FROM SAMSON			
A. SUMMARY			
Primary record number	7070	7070	7077.01
context	1	8	-
weight processed (kg)	5.5	7.52	1.85
volume processed (litres)	3	4	2
bone, fish	++		
bone indeterminate fragments	+		
plant macrofossils (seeds/grain, etc)	1	248	288
charcoal	-	+	+
no. seeds per litre soil	0.3	62	144

TABLE 3B. SAMINSON, PLANT MACROFOSSILS

			PRN (primary record number)		
TAXON	COMMON NAME		7070 (1)	7070 (8)	7077.01
CEREALS					
Hordeum sp.	barley	grain		24	97
Hordeum sp.		straight grain			21
Hordeum sp.		twisted grain			14
Hordeum vulgare var nudum		naked grain			59
Hordeum vulgare var nudum		naked straight grain		9	73
Hordeum vulgare var nudum		naked twisted grain		1	14
Hordeum sp.		hulled grain			3
Hordeum sp.		rachis internodes with stalked lateral spikelets		20	
Hordeum sp.		rachis internodes		58	
Hordeum sp.		tough basal internodes		15	
Triticum sp.	wheat	grain		2	
T. cf. dicoccum	cf. emmer	grain		2	
T. dicoccum	emmer	glume bases		3	
Avena sp.	oats			2	
Cereal gen. et sp. indet.			1	5(15+)	5(+5)
OTHER TAXA					
CRUCIFERAE					
Raphanus raphanistrum/ maritimus	wild/sea radish, pod fragments			(5+)	
CARYOPHYLLACEAE					
Spergula arvensis L.	corn spurrey			4	
CHENOPODIACEAE					
Chenopodium album L.	fat hen			54	
C. cf. rubrum L.	red goosefoot			2	
LEGUMINOSAE					
Vicia faba L. var minor	celtic bean	CULTIVATED		(1+)	
ROSACEAE					
Crataegus monogyna Jacq.	hawthorn			1	
POLYGONACEAE					
Polygonum aviculare group	knotgrass			3	

TABLE 3B, SAMSON, PLANT MACROFOSSILS cont.

Polygonaceae/Cyperaceae	(mineralised)			2	
CYPERACEAE					
Eleocharis sp.	spike-rush				1
GRAMINEAE					
Bromus sp.	brome			2(+)	
Gramineae A	grass			25	
Gramineae B	grass			2	
Gramineae spp.	grasses			4	
Unidentified				8 (one	1
				mineralised)	
TOTAL (seeds)			1	163	288
(chaff)				96	
				259	

KEY AS FOR TABLE 1B

TABLE 4A ISLES OF SCILLY : ASSESSMENT OF  
ENVIRONMENTAL SAMPLES FROM STEVAL POINT

CIVIL WAR BATTERY	
SUMMARY	
weight processed (kg)	5.2
volume processed (litres)	4
bone, fish + mammal (weight in kg)	0.05
shellfish (mostly limpets) "	0.1
plant macrofossils (nos. seeds/grain/etc)	254
no. seeds/litre	63.5

TABLE 4B STEVAL POINT, CHARRED PLANT MACROFOSSILS			
TAXON			NUMBER
Hordeum sp.	grain	barley	13
Hordeum sp.	hulled straight grain		20
Hordeum sp.	internode		1
Triticum sp.	grain	wheat	(+)
LEGUMINOSAE			
Ulex sp.	seeds	gorse	23
Ulex sp.	spines		14
Vicia/Pisum sp.		vetch/pea	4
Vicia/Lathyrus sp.		vetch/lare	1
Trifolium sp.		clover	
ERICACEAE			
Calluna vulgaris (L.) Hull	flowers	ling,heather	6
Calluna vulgaris (L.) Hull	stem fragments		5
Calluna/Erica sp.	flowers		15
Calluna/Erica sp.	roots		14
Erica sp.	seeds	heath,heather	62
ROSACEAE			
Potentilla sp.		tommentil	
COMPOSITAE			
			1
Cirsium/Carduus sp.		thistle	1
Chrysanthemum segetum L.		com marigold	1
CYPERACEAE			
Carex sp.		sedge	2
GRAMINEAE			
gen. et sp. indet.		grasses	6
Unidentified seeds			5
Pteridium aquilinum (L.) Kuhn	pinnules	bracken	60
TOTAL (seeds/fruits)			139
TOTAL (Other)			115
KEY: (+) fragments			