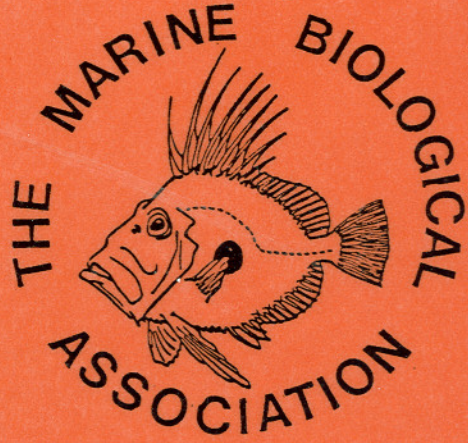
REPORT ON

CERTAIN SEDIMENT SHORES IN THE ISLES OF SCILLY

A REPORT

TO THE NATURE CONSERVANCY COUNCIL

N. A . HOLME



PLYMOUTH

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A report to the Nature Conservancy Council

N.A. Holme

Marine Biological Laboratory, Plymouth

January 1983

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INTRODUCTION

This report is the result of a brief visit to the Isles of Scilly in September 1982, when surveys were made of sediment shores during four low tides. The report is intended to complement that of Nichols and Harris (1982) by providing information on shores not included in their surveys. In addition there are some notes on the importance of the sediment shores of Scilly, in a national context.

A general account of the marine flora and fauna of Scilly is given by Harvey (1969), and a further account, with particular reference to sediment shores, is given by Nichols and Harris (1982).

The shores of Scilly are of particular interest for a number of reasons:-

(1) Because of the location of the isles in the Atlantic well to the south-west of mainland Britain, where the winter climate is consequently exceptionally mild;

(2) In the contrasts in wave exposure of the shores, from fully exposed on the outer coast grading to sheltered conditions within the archipelago;

(3) For the almost complete absence of freshwater inflow from streams and rivers, with consequent absence of water-borne pollutants, and of suspended solids;

(4) The sediments, formed of quartz grains derived from the granite, are coarse-grained and are inhabited by species elsewhere occurring in coarse shell or gravel deposits offshore.

METHODS

Surveys were carried out by N.A.H. during the low spring tides of September 17-20, 1982. On these days predicted levels of low tides at Devonport were either + 0.6 or + 0.7m, which is rather lower than MLWST (+ 0.8m), but these tides were by no means the lowest of the year. On September 17 thick fog restricted work to the mainland of St. Mary's, when Porth Hellick was surveyed.

Procedures adopted were similar to those used in previous surveys for NCC (summarised in Bishop and Holme, 1980), and the same classification of communities has been used in this report. Surveys involved a general overview of the shore, before low tide, followed by sampling by digging and a limited amount of sieving at representative sites, mainly in the low water zone. Characteristics of the habitat were described by reference to the sandy shore field card described by Holme and Nichols (1980), and grain size was estimated in the field by comparison with standards in a U.C.S. grain-size comparator (Kirby, 1973). A series of colour transparencies illustrating the general features of the shore, with closer views of particular habitats and species, has been lodged with NCC.

I am indebted to Dr P.E. Gibbs and Dr T. Harris for identification of certain species.

I am grateful to Dr R. Mitchell of NCC for helpful discussions during the course of the surveys and to Mr Cyril Nichols, boatman of the NCC boat Marius Nielsen for providing the necessary transport to the smaller islands, and for advice on local conditions.

DESCRIPTION OF SHORES VISITED

The object of the surveys was to provide ecological data on some of the smaller sediment shores, particularly between Tresco and St. Martin's, to supplement the surveys of wider areas covered by Nichols and Harris (1982). In addition, the survey at Porth Hellick has provided data on almost the only sheltered sediment shore on St. Mary's.

1. Porth Hellick, St. Mary's

Grid reference: 00.9210
Date of visit: 17.9.82
Weather: thick fog; little wind.

This is a deep land-locked inlet (Fig. 1), the inner part being well sheltered from wave action (see description in Harvey, 1969).

The shore is reached by a short walk along the nature trail beside Porth Hellick Pool, from which there is some fresh water drainage to the beach.

The shore can be divided into four sections.

(a) The upper beach is crescent-shaped, some 250m in extent, sloping moderately steeply to nearly half-tide mark over a distance of 30m. This well-drained upper beach consists of very coarse sand and gravel, with occasional boulders. It is likely to be virtually barren of life. There is a low sandy area backing the top of the beach.

(b) Below the upper beach is a fairly uniform mid-tide flat of coarse sand, about 200 x 200m across, extending to a very large pool on the lower shore. There are some scattered rocks and boulders, and a fresh-water stream. The sand was a little muddy, with a black sulphide layer below the surface. There was a greenish scum (of diatoms?) over the upper part of the beach.

Lugworm casts ($5\text{-}10m^{-2}$) occur generally over this beach.

Two stations were worked on the lower part of this beach, near the pool.

The burrowing fauna at these stations comprised the annelids *Arenicola marina*, *Lanice conchilega*, *Perinereis cultrifera*, *Nephtys*

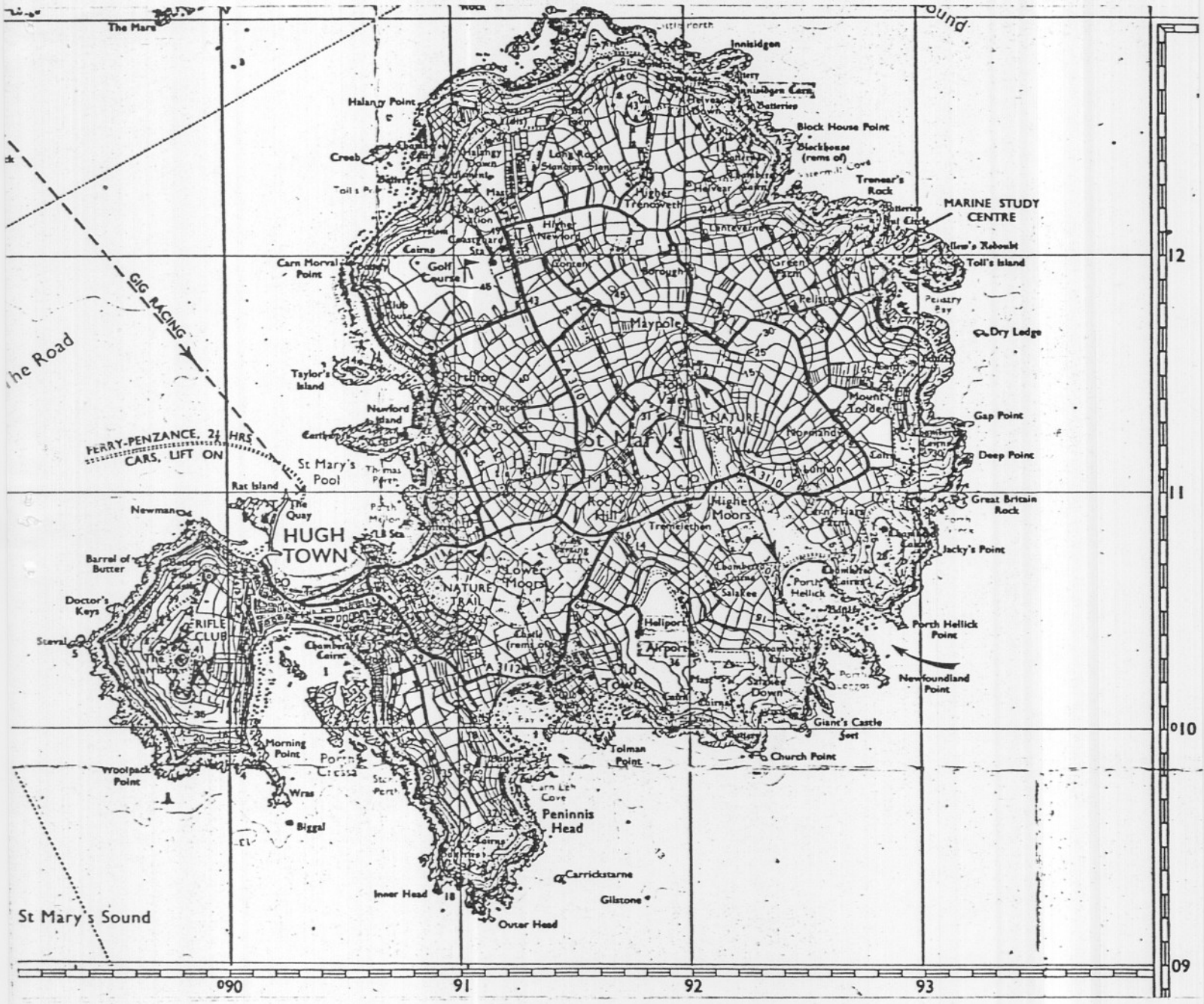


Fig. 1. Location of Porth Hellick (arrowed) on St Mary's

cirrosa and Notomastus latericeus. Bivalve molluscs included Cerastoderma edule and Venerupis decussata, and empty valves of V. pullastra and V. aurea were also taken. This was classified as a moderately-developed PULLASTRA community, although farther up this shore this merges into a MACOMA community.

Some fishing boats were moored on this beach and there was evidence of bait-digging (for lugworms).

(c) A large pool (at 926105), which Harvey (1969) states to be for the most part 2 feet (60 cm) in depth. The water level is about 1m above MLWST.

(d) An outer boulder shore, extending to LWST, through which a narrow channel from the pool runs to the sea at low tide. The channel is about 30m long, 1-2m wide, and 30cm deep at low tide. The boulders are covered with fucoids, and there is a distinct zone of Himanthalia elongata above the Laminaria zone. Among echinoderms were Asterias rubens, Luidia ciliaris, and Marthasterias glacialis.

Conclusion. The faunistically productive sediment shores at Porth Hellick occur between about half tide and low water neap levels, corresponding to (b) above. The predominant species are the lugworm Arenicola marina and the cockle Cerastoderma edule, with additional bivalves in the lower part of this shore. This mid-tide beach contains a moderately developed MACOMA community grading into a PULLASTRA community at lower levels. There are no sediments in the low spring tide zone.

2. St. Helen's

Grid reference: 00.901167
Date of visit: 18.9.82
Weather: calm, hazy, overcast

St. Helen's is a small island, about 500m across, in the northern part of the archipelago (Fig. 2). Its highest point is 144 ft (44m) above sea level. The wave-exposed northern side is rocky, and there is a long rocky causeway (Golden Ball Brow) extending for 600m from the west of the island. On its southern and more sheltered side there is a spit of sand and gravel, on the west side of which are the low tide areas investigated.

These consist of a low tide flat of sand (at 900167), about 50 x 50m, bounded on its outer side by a line of boulders (an old field wall?). To the south and east there is a sloping crescent-shaped shore of sandy gravel about 100m across.

The low-tide flat (Station 1) is of medium sand, with standing water at low tide, and with a grey sulphide layer immediately beneath the surface. Arenicola casts were numerous at 10-20m^{-2}, and Lanice (1m^{-2}), Glycera gigantea and Nephtys hombergi were also recorded. Ensis arcuatus occurred (<1m^{-2}), and Tellina tenuis, and echinoderms included fragments of Echinocardium sp., also Leptosynapta.

In the more sloping gravel shore (Station 2) where the deposit was of 'granule' size, the sediment was black below the surface. Perinereis cultrifera occurred in addition to the polychaetes listed above, but the only bivalve mollusc was Dosinia exoleta; and the only echinoderm was a fragment of Leptosynapta.

Conclusion. This sediment shore is limited in extent, with a relatively poor fauna, corresponding to a SPAT.FASC community. This shore would be worth further exploration on a lower spring tide.

3. Foremans Island

Grid reference: 00.900161
Date of visit: 19.9.82
Weather: calm, hazy, overcast

Foremans Island and associated reefs and islets form an interconnecting complex of about 400 x 300m at low tide. Much of the intertidal area is of boulders, but there is a good stretch of sand on the east side, and a more limited sandy beach at the north end. All shores are relatively sheltered from wave action.

Eastern shore (901159). Here there is a ridge of sand, 150m long, sloping moderately steeply to a low tide flat.

On the sloping beach (Station 1) the deposit was of very coarse sand on which were growing some green, red and brown algae. The fauna was not very extensive, including the annelids Arenicola marina (<5m^{-2}), Lanice (5m^{-2}), Glycera gigantea, Marphysa belli and a capitellid. The only

bivalve mollusc taken was Dosinia exoleta. The occurrence of a commensal polynoid worm with the burrowing holothurian Leptosynapta inhaerens was of interest.

On the adjacent low tide flat (Station 2) the deposit was finer (medium sand), and as at station 1 the sand below the surface was grey, but without a distinct black layer. Surface algae included Ulva and Enteromorpha. The fauna was richer than at station 1, the most conspicuous addition being the burrowing anemone Cereus pedunculatus which was common on much of this flat (say $100m^{-2}$), and which extended into shallow water areas not uncovered on this tide. This anemone appeared to be attached to grains of coarse sand at its lower end, rather than to stones.

Arenicola and Lanice both occurred at about $5m^{-2}$, the terebellid Loimia medusa, which lives in a large sandy tube, was present, and Nephtys hombergi was also recorded. The bivalve Dosinia exoleta and the holothurian Leptosynapta sp. were taken.

Northern shore. At the north end of the area there is a small sandy beach about 70m across at grid ref. 899161. The grade of sand here was rather variable, a single sample indicating very coarse sand on the comparator. Ulva and other surface living algae were quite common. Annelids included Arenicola ($10-20m^{-2}$), Lanice ($10m^{-2}$), Glycera gigantea, and there was some empty tubes, presumed to be of Loimia. Bivalves comprised Dosinia exoleta and Venus fasciata, and echinoderms included several Echinocardium cordatum and a single Leptosynapta inhaerens. The anemone Cereus pedunculatus occurred at low densities. On the previous day a nearby low tide sandspit to the S.E. of Northwethel (grid ref. 898163) had been found to have a population of Ensis arcuatus. None were seen on Foremans Island, and it is possible that their scarcity or absence on Foremans Island is due to bait digging there.

On the 19th September a number of people were using hand nets (presumably for shrimps or prawns) on the western side of the Foremans Island group and it seems likely that this area is visited fairly regularly by people from Old Grimsby, which is only a few hundred metres distant by boat.

Conclusion. Both beaches on Foremans Island supported a moderately-developed SPAT.FASC community. The high density of Cereus pedunculatus,

forming what may amount to a distinct community, is of particular interest, and observations from the boat indicated that this species was widespread in shallow water in this region.

4. Pentle Bay, Tresco

Grid reference: 00.9014

Date of visit: 20.9.82

Weather: fresh S.W. wind. Heavy rain showers and bright intervals.

Pentle Bay forms a linear beach, 1 km in length, on the S.E. side of Tresco (Fig. 2). The beach is sheltered from swell, but may be exposed to waves generated within Crow Sound during E. winds. The shore is backed by dunes, the upper beach sloping moderately steeply down to about MLWN level. Below this is a low tide flat which in places extends for 200-300m seaward. Pentle Rock in the middle of the bay is joined to the shore at low tide by a causeway of sand, gravel and weed-covered boulders.

In the northern part of the bay (Station 1, grid ref. 904144), at MLW level there is a flat of medium sand, slightly grey below the surface, and with a few surface-living algae. The fauna, which was rather sparse, included Arenicola ($10m^{-2}$), Lanice (scarce, local), Nephtys cirrosa, and the bivalve Tellina tenuis ($2m^{-2}$). On this day the tide did not go out sufficiently far to expose the low-spring tide community. There was evidence of bait-digging locally.

South of Pentle Rock, there is a small sandy beach (Station 2, grid ref. 902142), about 150m across. The sand here was somewhat finer (fine sand on the comparator), uniformly grey below, and with standing water at low tide. The fauna included Arenicola ($10m^{-2}$), Lanice ($1m^{-2}$), Nephtys hombergi, Tellina tenuis ($2m^{-2}$), and the heart urchin Echinocardium cordatum (?).

Between Skirt Island (903140) and Crow Point (893133), at the S. tip of Tresco, there is a mixed beach of boulders and rocks, with some patches of sand near low water. The upper beach is typically steeply sloping and backed by dunes. A small sandy beach near Tobaccomans Point (at 904138) was not investigated, but S. of Skirt Island (at 901138) there was a good growth of Zostera marina (fronds 30-35cm long) in sand at about MLW, and

further patches occurred nearby. It appeared there might be a good low tide sand flat, with further Zostera in this area, but the tide was too high at this stage. West of Crab's Ledge (897137) the shore is of boulders and rocks.

Conclusion. The tide was not low enough to allow proper exploration of any of the LWST zone on this tide. The shore in Pentle Bay at MLW corresponds to a TELLINA community, giving way at LWST to a SPAT.FASC or possibly an ECHINO.SILI community. The following areas in particular need exploration on a good low tide:

(1) Spit running S.E. from Lizard Point.

(2) Flats either side of Pentle Rock.

(3) Between Crab's Ledge and Skirt Island.

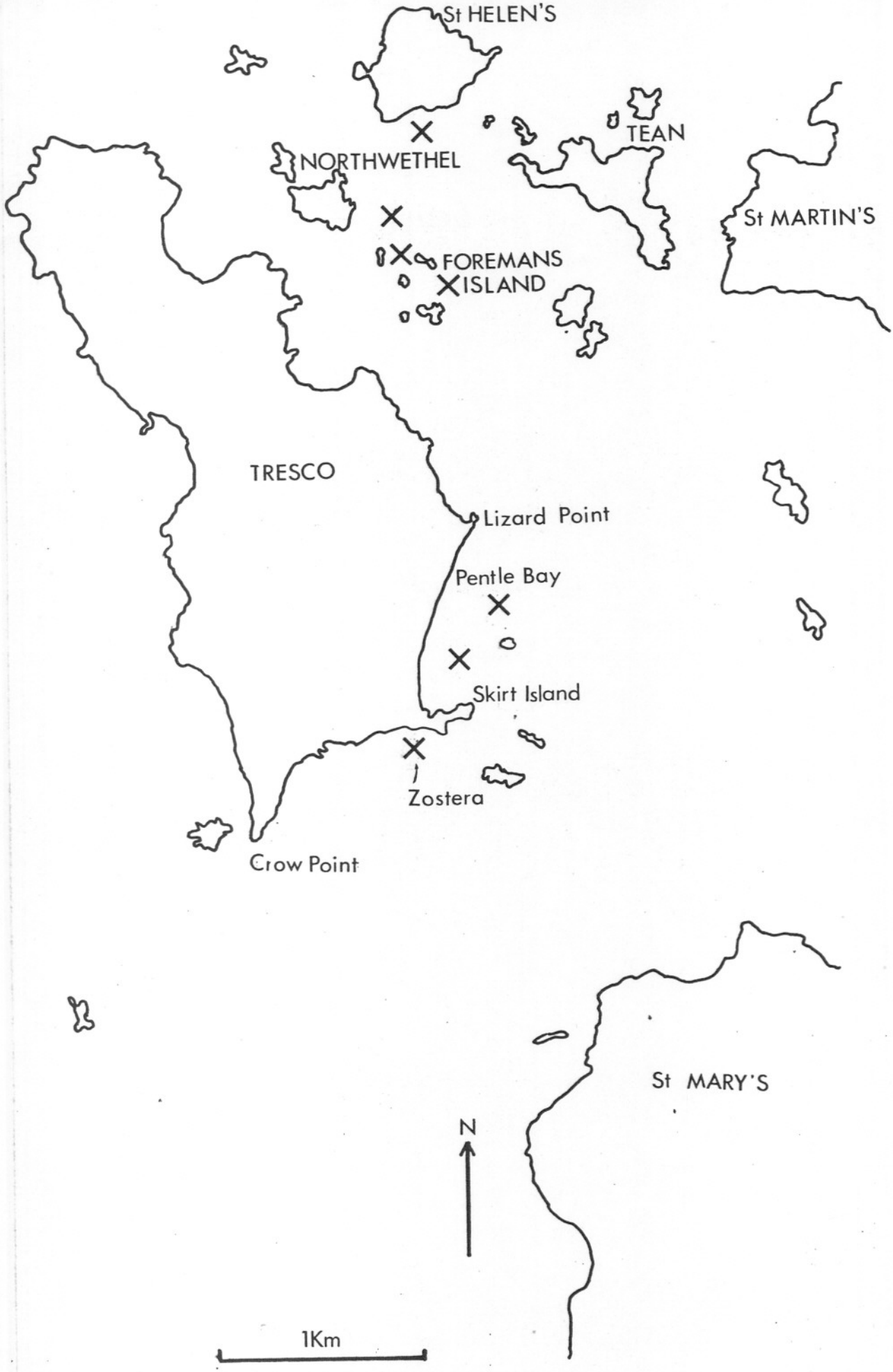


Fig. 2. Location of stations (X) worked in September 1982 between Tresco and St Martin's

CONCLUSIONS

The surveys at St. Helen's, Foremans Island and Pentle Bay complement the descriptions given by Nichols and Harris (1982) of the important sediment shores between the more northerly isles of the archipelago (Fig. 2). The associations found at LWST at both St. Helen's and Foremans Island represent moderately-developed SPATANGUS-FASCIATA communities (see Bishop and Holme, 1980, and Appendix), and there are in addition dense beds of the burrowing anemone Cereus pedunculatus which may form a distinct association, possibly a variant of the PULLASTRA community. Observations over the side of the boat in the St. Helen's - Foremans Island area indicated that these same populations extended into shallow water in the channels between the islands, so that the parts exposed at LWST represent but the uppermost fringe of extensive sublittoral populations.

Surveys at Pentle Bay could not be extended to the extreme LWST zone; higher up at about MLW there was a poorly developed TELLINA community. This probably gives way to a SPATANGUS-FASCIATA community at LWST, with a fauna similar to that described by Nichols and Harris (1982) from the nearby St. Martin's flats. It is likely that the substratum in this area is more subjected to wave action and scour than in the more northerly sites surveyed.

Eel grass, Zostera marina, was notably absent from the shores surveyed, although some patches were found at MLW on the south side of Tresco. Fairly extensive beds of Zostera were seen a few metres below LWST both on the south and east sides of Tresco, however. This species has important effects both in stabilising and enriching the substratum, and further records of its occurrence are given by Nichols and Harris.

The survey at Porth Hellick was on almost the only sheltered shore on St. Mary's (Fig. 1). However, productive sediments were here confined to the mid-tide to low water neaps levels, where there was a moderately-developed MACOMA community, giving way to a PULLASTRA community at lower levels near the pool.

A noticeable feature of the more sheltered beaches, both at St. Helen's and Foreman's Island, was the relatively heavy growth of Ulva and other green and red algae attached to the sandy substratum. Their presence indicates a relatively undisturbed sediment (at least at that time of year), the decaying algae no doubt contribute to the

relatively high level of organic matter in some sediments, giving rise to a black sulphide layer close to the surface. Such conditions tend to favour certain polychaetes, but may be avoided by bivalve molluscs and echinoderms.

Coarse-grained sediments, such as occur in Scilly, are often associated with wave and/or tidal scour, and tend to be barren of life, particularly when they lie in the intertidal zone. Scilly is unique in the occurrence of extensive flats of coarse sediment under sheltered conditions and where tidal scour is not excessive, so that relatively rich animal communities are supported. The species which occur at low water typically form a SPATANGUS-FASCIATA community, some of the species being detailed in this report, others in the more extensive lists of Nichols and Harris (1982).

In a national context, SPATANGUS-FASCIATA communities are rare and localised on the shore, and the Scilly Isles provide by far the best examples in southern Britain. Other examples of this community occur in Scotland (Bishop and Holme, 1980), where they are usually associated with Lithothamnion gravels ("maerl"), but these northern examples, although of considerable interest, are limited in extent. It follows that the sediment shores of the Scilly Isles must be considered as of at least national, if not international, importance.

CONSERVATION

The sediment shores in Scilly are not at present subjected to any severe pressures, either from direct human interference or from pollution. Some bait digging, shrimping and prawning occurs on the flats, and marine biology courses are held in the area, but considering the extent of the shores, such pressures are likely to be minimal. However the sediment shores, and the adjacent subtidal communities are of such high value that efforts should be made to ensure that conservation of the marine environment is effective.

REFERENCES

Bishop, G.M. and Holme, N.A. 1980. The sediment shores of Great Britain. An assessment of their conservation value. SMBA/MBA Report to the Nature Conservancy Council, 77 + 20 pp.

Harvey, L.A. 1969. Marine flora and fauna of the Isles of Scilly. Journal of Natural History, 3, 3-18.

Holme, N.A. and Nichols, D. 1980. Habitat survey cards for the shores of the British Isles. Occasional Publication, Field Studies Council, 2, 16 pp.

Kirby, R. 1973. The U.C.S. grain-size comparator disc. Marine Geology, 14, M11-M14.

Nichols, D. and Harris, T. 1982. A survey of the low-tide flats of the Isles of Scilly. Report to the Nature Conservancy Council, 79 pp.

APPENDIX

Porth Hellick.	NCC Data Sheets
	Field Card
St. Helens	NCC Data Sheets
	Field Card
Northwethel	Field Card
Foremans Island	NCC Data Sheets
	Field Card
Pentle Bay	NCC Data Sheets
	Field Card

Descriptions of communities, from Bishop and Holme (1980):

Tellina communities

Arenicola (Macoma) communities

Pullastra communities

Spatangus-Fasciata communities

N.C.C. SEDIMENT SHORE RECORDING SHEET

LOCALITY	ABSTRACT	GRID REFERENCE	LATITUDE	LONGITUDE
PORTH HELLICK, ST. MARY'S, SCILLY		009251 05	49°55'N	06°17'W
SECTOR 08 / SEA AREA S19		DATE OF VISIT 17 09 82	TIDAL LEVEL MLW	RECORDER N.A.H.

COASTAL SITUATION:			OFFSHORE FEATURES:	
Sea loch			Islands	
Rapids			Reefs	
Narrows			Breakwater	
Estuary			Sandbanks	
Saltmarsh			Shoal	
Island			COASTAL HEIGHT:	
Open coast	SITUAT	2	High	
Semi-enclosed			Moderate	
Enclosed			Low	X
Small bay (<2km across)			COASTAL BACKING:	
Large bay			Sand dunes	X
Sheltered inlet	SITUAT	1	Low cliff	
Lagoon			Moderate cliff	
Tide channel			High cliff	
Pocket beach			Saltmarsh	
Linear beach			Machair	
SHORE TYPE:	dom	2°	Dune/machair	
Large boulder (>1024mm)			Sea wall	
Medium boulder (512-1024mm)		X	Shingle ridge	X
Small boulder (256-512mm)		X	Grassland	
Cobbles (64-256mm)			ASPECT & PREVAILING WIND:	asp. / wind
Pebbles (4-64mm)			North	
Granules (2-4mm)	X		North East	
Coarse sand ($\frac{1}{2}$-2mm)			East	
Medium sand ($\frac{1}{4}$-$\frac{1}{2}$mm)			South East	X
Fine sand ($\frac{1}{16}$-$\frac{1}{4}$mm)			South	
Shelly sand (25% shell)			South West	X
Muddy sand	X		West	
Mud			North West	
Shingle (mobile & smooth)			EXPOSURE:	
Storm beach			Very exposed	
Black layer	X		Exposed	
ROCK TYPE:	GRANITE		Moderate	X
BIOTA:			Sheltered	X
Barren			Very sheltered	
Crust. Poly.			TIME OF E.L.W.S.T.	NOON
Tellina			SPRING TIDE RANGE (max, m.):	5.0
Macoma		X	NEAP TIDE RANGE (min, m,):	2.3
Scrobicularia			ANNUAL RAINFALL (mm):	830
Spisula			CURRENT STRENGTH (max speed knots):	
Lanice			Strong	
Pullastra		X	Moderate	
Echino. Sili.			Weak	X
Spat. Fasc.			SALINITY:	
COVER:			High (>36‰)	
Low sparse		X	Normal	X
Low moderate			Low (<30‰ throughout shore)	X
Low develop.			Stream flowing onto shore	
Mid sparse		X	EASE OF ACCESS:	
Mid moderate			Easy	X
Mid develop.			Moderate	
SLOPE:			Difficult	
Steep (50m HW-LW)			METHOD OF ACCESS:	Short walk
Moderate (50-150m HW-LW)			DISTANCE FROM NEAREST TOWN: (km)	2
Gentle (150m HW-LW)			SHORE USAGE:	
Moderate upper beach, low tide flat		X	Recreation	X
Flat (none of above)			Beach fishing	
Irregular contours			Bait digging	X
INTERTIDAL EXTENT: (m)		250	Shellfish collection	
SUBTIDAL EXTENT: (m)			Aquaculture	
HABITAT EXTENT: (m)		250	Other Field classes	X

PORTH HELLICK

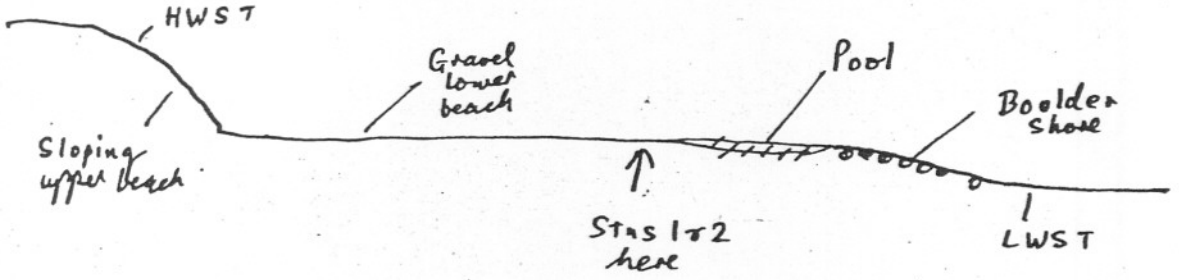
SEDIMENT SHORES CONT.

SCIENTIFIC INTEREST:		EDUCATIONAL INTEREST:	
Habitat variety	X	Field study	X
Species abundant		Variety	
Species absent		Other	
Species at or near limit		AMENITY	
Species richness (gd, av, poor)	AV.	Attractive beach	X
Previous study area	X	Local resort	
Ornithological interest (type?) Feeding	X	Popular	
Seal haul out/breeding area		Public facilities	
Polluted (type?)		SUBJECTIVE RATING:	
Very clean		Very good	
MNR, LNR or SSSI near/adjacent 5551	X	Good	
Fragile		Fair	X
Threatened		Poor	

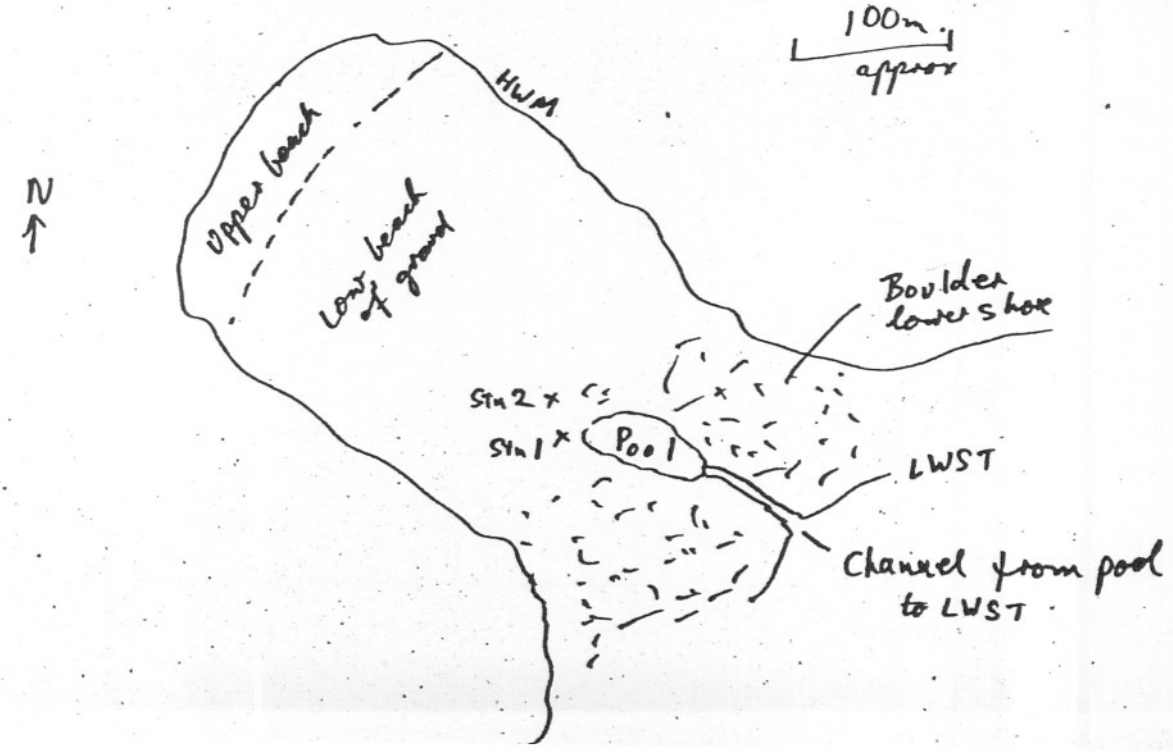
ABSTRACT:

PHOTOGRAPHS TAKEN: X

SHORE PROFILE:



SKETCH MAP OF AREA:



N.C.C. SPECIES RECORDING SHEET

LOCALITY	GRID REFERENCE	LATITUDE	LONGITUDE
PORTH HELLICK, ST. MARY'S, SCILLY	009251 05	49° 55' N	06° 17 W

SECTOR	SEA AREA	DATE OF VISIT	TIDAL LEVEL	RECORDER
08	S19	17 09 82	MLW	N.A.H.

Species to be listed in phyla as follows: Algae (Chl, Phae, Rhod), Angiosperms, Porifera, Coelenterata (Hydrozoa, Scyphozoa, Anthozoa), Platyhelminthes, Nemertea, Sipuncula, Annelida, Crustacea (Cirripedia, Malacostraca - isopods, amphipods & decapods), Pycnogonids, Mollusca, (Gastropods - opithobranchs & prosobranchs - Bivalves, Polyplacophora, Cephalopoda), Brachiopoda, Echinodermata, Bryzoa, Tunicates, Vertebrates.

	Abundance		Abundance
ANNELIDA			
Arenicola marina			
Lanice conchilega			
Nephtys cirrosa			
Notomastus latericeus			
Petineteis cultrifera			
MOLLUSCA			
Cerastoderma edule			
Dosinia exoleta			
Venerupis decussata			
ECHINODERMATA			
Asterias rubens			
Luidia ciliaris			
Marthasterias glacialis			

serial no. S	SANDY Shore Field Card S. W. Marine Biology Study Group	Coastal Area:

Date: 17 / 9 / 1982 Observer: N.A.H. Locality: PORTH HELLICK, SCILLY

Time: 1210 to BST Grid Ref.: 00 926 105

Time of L.T.: 1131 hrs

Predicted tide ht.: 0.7 m Pollution (if any): Some FW influx Designation:

at: Devonport Access: Short walk from main road.

Distance HW to LW: 250 m (HW to pool)

Coast: cliff ☐1 low ☑2 dunes ☐3 estuary/inlet ☐4

Cards; total no. 2 whole shore ☐5 upper ☐6 mid ☐7 lower ☑8 low-tide flat ☐9 Station 1

1. Dominant type: pebbles ☐10 granules ☑11 sand ☐12 silt & clay ☐13 | comparator GRAN. 14 calcareous ☐15
2. Secondary ftrs.: reefs ☐16 boulders ☑17 cobbles ☐18 pebbles ☐19 granules ☐20 sand ☐21 silt & clay ☐22
3. Slope: moderate ☐23 gentle ☑24 flat ☐25 irregular ☐26
4. Wave exposure: v. exp. ☐27 exp. ☐28 shelt. ☑29 v. shelt. ☐30
5. Detail: ripples ☐31 sand waves ☐32 banks ☐33 wave/current disturbed ☐34 none ☐35 Slight surface pitting
6. Consistency: firm ☑36 shallow sink ☐37 deep sink ☐38 mobile ☐39 powder ☐40
7. Black layer: under 2 cm. ☑41 2-10 cm. ☐42 over 10 cm. ☐43 indistinct grey ☐44 absent ☐45
8. Drainage: good ☑46 standing water ☐47 pools ☐48 S. W. stream ☐49 F. W. stream ☐50 Standing water nr. pool
9. Surface life: algae ☐51 eel grass ☐52 mussels ☐53 other ☐54 Nil
10. Lugworm casts: plentiful ☑55 scattered ☐56 local ☐57 scarce ☐58 absent ☐59 Widely distributed at ca 2 m^{-2}
11. Holes: over 10 mm. ☐60 3-10 mm. ☐61 under 3 mm. ☐62 | plentiful ☐63 scat. ☐64 scarce ☐65 absent ☑66
12. Tubes: sand ☐67 shell ☑68 mud ☐69 other ☐70 | large ☐71 small ☐72 detached ☐73 Lanice scarce
13. Burrowers: anemones ☐74 worms ☑75 crustacea ☐76 bivalves ☑77 urchins ☐78 sand eels ☐79
14. Drift: mollusc shells ☐80 crab shells ☐81 egg cases ☐82 algae ☑83 eel grass ☐84
15. Activity: birds ☑85 bait ☑86 fishing ☐87 food collection ☐88 field studies ☑89 recreation ☑90 A few moved boats
16. Numbers spp.: plants: high ☐91 med. ☐92 low ☐93 | animals: high ☐94 med. ☐95 low ☑96
17. Numbers indivs.: plants: high ☐97 med. ☐98 low ☐99 nil ☑100 | animals: high ☐101 med. ☐102 low ☑103 nil ☐104

197

PORTH HELLICK Station 1. 17/9/82.

Annelida

Arenicola marina – ca. 2 m^{-2}

Perinereis cultrifera – 1 (T. Harris det.)

Lanice conchilega – 1 or 2 seen.

Mollusca

Dosinia exoleta – 1 living. Paired valves common.

serial no. S	SANDY Shore Field Card S. W. Marine Biology Study Group	Coastal Area:

Date: 17 / 9 / 1982 Observer: N.A.H. Locality: PORTH HELLICK, SCILLY

Time: 1230 to BST Grid Ref.: 00 926 105

Time of L.T.: 11.39 hrs

Predicted tide ht.: 0.7 m Pollution (if any): —

at: Devanport Some F.W. stream inflow Designation:

Distance HW to LW: 250 m (HW to pool) Access: Short walk from rd

Coast: cliff ☐1 low ☑2 dunes ☐3 estuary/inlet ☐4

Cards; total no. 2 whole shore ☐5 upper ☐6 mid ☐7 lower ☐8 low-tide flat ☐9 Station 2.

1. Dominant type: pebbles ☐10 granules ☐11 sand ☑12 silt & clay ☐13 | comparator C.S. 14 calcareous ☐15
2. Secondary ftrs.: reefs ☐16 boulders ☑17 cobbles ☐18 pebbles ☐19 granules ☐20 sand ☐21 silt & clay ☐22 Numerous
3. Slope: moderate ☐23 gentle ☐24 flat ☑25 irregular ☐26
4. Wave exposure: v. exp. ☐27 exp. ☐28 shelt. ☑29 v. shelt. ☐30
5. Detail: ripples ☐31 sand waves ☐32 banks ☐33 wave/current disturbed ☐34 none ☐35 Slight surface irregularity
6. Consistency: firm ☑36 shallow sink ☐37 deep sink ☐38 mobile ☐39 powder ☐40
7. Black layer: under 2 cm. ☑41 2-10 cm. ☐42 over 10 cm. ☐43 indistinct grey ☐44 absent ☐45
8. Drainage: good ☐46 standing water ☑47 pools ☐48 S. W. stream ☐49 F. W. stream ☐50
9. Surface life: algae ☑51 eel grass ☐52 mussels ☐53 other ☐54 Some filamentous red weed and Ulva
10. Lugworm casts: plentiful ☑55 scattered ☐56 local ☐57 scarce ☐58 absent ☐59 ca 5-10 m^{-2}
11. Holes: over 10 mm. ☐60 3-10 mm. ☐61 under 3 mm. ☐62 | plentiful ☐63 scat. ☐64 scarce ☐65 absent ☑66
12. Tubes: sand ☐67 shell ☑68 mud ☐69 other ☐70 | large ☐71 small ☐72 detached ☐73 Lanice 5 m^{-2}
13. Burrowers: anemones ☐74 worms ☐75 crustacea ☐76 bivalves ☐77 urchins ☐78 sand eels ☐79
14. Drift: mollusc shells ☐80 crab shells ☐81 egg cases ☐82 algae ☑83 eel grass ☐84
15. Activity: birds ☑85 bait ☑86 fishing ☐87 food collection ☐88 field studies ☑89 recreation ☑90
16. Numbers spp.: plants: high ☐91 med. ☐92 low ☑93 | animals: high ☐94 med. ☐95 low ☑96
17. Numbers indivs.: plants: high ☐97 med. ☐98 low ☑99 nil ☐100 | animals: high ☐101 med. ☐102 low ☑103 nil ☐104

1

PORTH HELLICK. Station 2. 17/9/82

Annelida

Arenicola marina – ca. 5-10 m^{-2}

Lanice conchilega – ca. 5 m^{-2}

Nephtys cirrosa – 1 (T. Harris det)

Notomastus latericeus – 1 (T. Harris det.)

Mollusca

Cerastoderma edule – 1 living

Venerupis decussata – 1 living, also empty valves.

(Venerupis aurea – 1 empty valve)

N.C.C. SEDIMENT SHORE RECORDING SHEET

LOCALITY	ABSTRACT	GRID REFERENCE	LATITUDE	LONGITUDE
ST. HELENS, SCILLY		0 0 9 0 1 1 6 7	49° 58'N	06° 19·5'W.

SECTOR	SEA AREA	DATE OF VISIT	TIDAL LEVEL	RECORDER
0 8	S 1 9	1 8 0 9 8 2	LWST	N.A.A.

COASTAL SITUATION:		
Sea loch		
Rapids		
Narrows		
Estuary		
Saltmarsh		
Island		
Open coast		
Semi-enclosed	SITUAT 2	X
Enclosed		
Small bay (<2km across)		
Large bay		
Sheltered inlet		
Lagoon		
Tide channel		
Pocket beach	SITUAT 1	X
Linear beach		

SHORE TYPE:	dom	2°
Large boulder (>1024mm)		
Medium boulder (512-1024mm)		
Small boulder (256-512mm)		
Cobbles (64-256mm)		
Pebbles (4-64mm)		
Granules (2-4mm)		
Coarse sand ($\frac{1}{2}$-2mm)		
Medium sand ($\frac{1}{4}$-$\frac{1}{2}$mm)	X	
Fine sand ($\frac{1}{16}$-$\frac{1}{4}$mm)		
Shelly sand (25% shell)		
Muddy sand		
Mud		
Shingle (mobile & smooth)		
Storm beach		
Black layer		X

ROCK TYPE: GRANITE

BIOTA:	
Barren	
Crust. Poly.	
Tellina	
Macoma	
Scrobicularia	
Spisula	
Lanice	
Pullastra	
Echino. Sili.	
Spat. Fasc.	X

COVER:	
Low sparse	X
Low moderate	
Low develop.	
Mid sparse	
Mid moderate	
Mid develop.	

SLOPE:	
Steep (50m HW-LW)	
Moderate (50-150m HW-LW)	
Gentle (150m HW-LW)	
Moderate upper beach, low tide flat	X
Flat (none of above)	
Irregular contours	

INTERTIDAL EXTENT: (m)	200
SUBTIDAL EXTENT: (m)	
HABITAT EXTENT: (m)	100

OFFSHORE FEATURES:	
Islands	X
Reefs	X
Breakwater	
Sandbanks	
Shoal	

COASTAL HEIGHT:	
High	
Moderate	X
Low	

COASTAL BACKING:	
Sand dunes	
Low cliff	X
Moderate cliff	
High cliff	
Saltmarsh	
Machair	
Dune/machair	
Sea wall	
Shingle ridge	
Grassland	

ASPECT & PREVAILING WIND:	asp.	wind
North		
North East		
East		
South East		
South		
South West	X	X
West		
North West		

EXPOSURE:	
Very exposed	
Exposed	
Moderate	
Sheltered	X
Very sheltered	

TIME OF E.L.W.S.T.	NOON
SPRING TIDE RANGE (max, m.):	5.0
NEAP TIDE RANGE (min, m,):	2.3
ANNUAL RAINFALL (mm):	850

CURRENT STRENGTH (max speed knots):	
Strong	
Moderate	
Weak	

SALINITY:	
High (>36‰)	
Normal	X
Low (<30‰ throughout shore)	
Stream flowing onto shore	

EASE OF ACCESS:	
Easy	
Moderate By boat	X
Difficult	X

METHOD OF ACCESS: Boat	
DISTANCE FROM NEAREST TOWN: (km)	6

SHORE USAGE:	
Recreation	
Beach fishing	
Bait digging	
Shellfish collection	
Aquaculture	
Other	

ST. HELEN'S

SEDIMENT SHORES CONT.

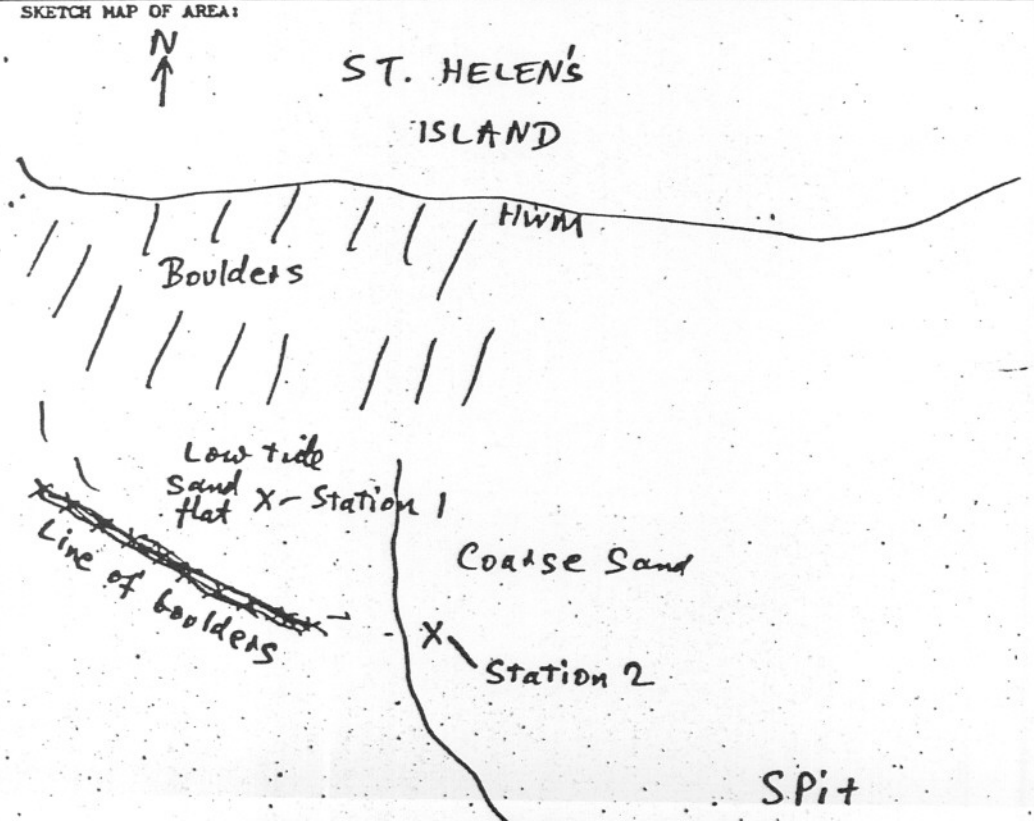
SCIENTIFIC INTEREST:		EDUCATIONAL INTEREST:	
Habitat variety		Field study	
Species abundant		Variety	
Species absent		Other	
Species at or near limit		AMENITY	
Species richness (gd, av, poor)	POOR	Attractive beach	
Previous study area		Local resort	
Ornithological interest (type?) Bird feeding		Popular	
Seal haul out/breeding area ?		Public facilities	
Polluted (type?)		SUBJECTIVE RATING:	
Very clean		Very good	
MNR, LNR or SSSI near/adjacent		Good	
Fragile		Fair	X
Threatened		Poor	

ABSTRACT:

PHOTOGRAPHS TAKEN: X

SHORE PROFILE:

SKETCH MAP OF AREA:



N.C.C. SPECIES RECORDING SHEET

LOCALITY	GRID REFERENCE	LATITUDE	LONGITUDE
ST. HELEN'S, SCILLY	009011167	49° 58'N	06° 19·5'W

SECTOR	SEA AREA	DATE OF VISIT	TIDAL LEVEL	RECORDER
08	S19	180982	LWST	N.A.H.

Species to be listed in phyla as follows: Algae (Chl, Phae, Rhod), Angiosperms, Porifera, Coelenterata (Hydrozoa, Scyphozoa, Anthozoa), Platyhelminthes, Nemertea, Sipuncula, Annelida, Crustacea (Cirripedia, Malacostraca - isopods, amphipods & decapods), Pycnogonids, Mollusca, (Gastropods - opithobranchs & prosobranchs - Bivalves, Polyplacophora, Cephalopoda), Brachiopoda, Echinodermata, Bryzoa, Tunicates, Vertebrates.

	Abundance		Abundance
ANNELIDA			
Arenicola marina			
Glycera gigantea			
Lanice conchilega			
Nephtys hombergi			
Perinereis cultrifera			
MOLLUSCA			
Dosinia exoleta			
Ensis arcuatus			
Tellina tenuis			
ECHINODERMATA			
Echinocardium sp.			
Leptosynapta sp.			

serial no. S	SANDY Shore Field Card S. W. Marine Biology Study Group	Coastal Area:

Date: 18 / 9 / 82 Observer: N.A.H Locality: ST. HELENS, SCILLY

Time: 1150 to BST Grid Ref.: 00 900 167

Time of L.T.: 1222 hrs

Predicted tide ht.: 0.6 m Pollution (if any): —

at: Devonport Designation:

Distance HW to LW: 200 m Access: By boat

Upper beach of boulders.

Coast: cliff ☐1 low ☑2 dunes ☐3 estuary/inlet ☐4 Hill behind low cliff.

Cards; total no. 2. whole shore ☐5 upper ☐6 mid ☐7 lower ☐8 low-tide flat ☑9 STATION 1

1. Dominant type: pebbles ☐10 granules ☐11 sand ☑12 silt & clay ☐13 | comparator MS 14 calcareous ☐15 Nil
2. Secondary ftrs.: reefs ☐16 boulders ☐17 cobbles ☐18 pebbles ☐19 granules ☐20 sand ☐21 silt & clay ☐22 N.I.
3. Slope: moderate ☐23 gentle ☐24 flat ☑25 irregular ☐26
4. Wave exposure: v. exp. ☐27 exp. ☐28 shelt. ☑29 v. shelt. ☐30
5. Detail: ripples ☐31 sand waves ☐32 banks ☐33 wave/current disturbed ☐34 none ☐35 Arenicola hummocks
6. Consistency: firm ☑36 shallow sink ☐37 deep sink ☐38 mobile ☐39 powder ☐40
7. Black layer: under 2 cm. ☑41 2-10 cm. ☐42 over 10 cm. ☐43 indistinct grey ☐44 absent ☐45
8. Drainage: good ☐46 standing water ☑47 pools ☐48 S. W. stream ☐49 F. W. stream ☐50
9. Surface life: algae ☑51 eel grass ☐52 mussels ☐53 other ☐54 Possibly a few rooted algae
10. Lugworm casts: plentiful ☑55 scattered ☐56 local ☐57 scarce ☐58 absent ☐59 10-20 m^{-2}
11. Holes: over 10 mm. ☑60 3-10 mm. ☐61 under 3 mm. ☐62 | plentiful ☐63 scat. ☑64 scarce ☐65 absent ☐66 Ensis.
12. Tubes: sand ☐67 shell ☑68 mud ☐69 other ☐70 | large ☐71 small ☐72 detached ☐73 Lanice - 1 m^{-2}
13. Burrowers: anemones ☐74 worms ☑75 crustacea ☐76 bivalves ☑77 urchins ☑78 sand eels ☐79
14. Drift: mollusc shells ☐80 crab shells ☐81 egg cases ☐82 algae ☑83 eel grass ☐84
15. Activity: birds ☑85 bait ☐86 fishing ☐87 food collection ☐88 field studies ☐89 recreation ☐90 Bird feeding
16. Numbers spp.: plants: high ☐91 med. ☐92 low ☑93 | animals: high ☐94 med. ☐95 low ☑96
17. Numbers indivs.: plants: high ☐97 med. ☐98 low ☑99 nil ☐100 | animals: high ☐101 med. ☐102 low ☑103 nil ☐104

1978S

ST. HELENS. Station 1. 18/9/82

Annelida

Arenicola marina - 10-20 m^{-2}

Glycera gigantea - 1 (P.E.G. det.)

Lanice conchilega - 1 m^{-2}

Nephtys hombergi - 1 (P.E.G. det)

Mollusca

Ensis arcuatus - less than 1 m^{-2}

Tellina tenuis - 1

Echinodermata

Echinocardium sp. - a fragment

Leptosynapta ? - 1

serial no. S	SANDY Shore Field Card S. W. Marine Biology Study Group	Coastal Area:

Date: 18/9/82 Observer: N.A.H. Locality: ST. HELEN'S, SCILLY
Time: 1215 to BST
Time of L.T.: 1222 hrs
Predicted tide ht.: 0.6 m Pollution (if any): —
at: Devonport
Distance HW to LW: 200 m
Grid Ref.: 00 901 166
Designation:
Access: By boat
About 100 m S. of Stal

Coast: cliff ☐1 low ☑2 dunes ☐3 estuary/inlet ☐4

Cards; total no. 2 whole shore ☐5 upper ☐6 mid ☐7 lower ☑8 low-tide flat ☐9 STATION 2

1. Dominant type: pebbles ☐10 granules ☑11 sand ☐12 silt & clay ☐13 | comparator GRAV 14 calcareous ☐15
2. Secondary ftrs.: reefs ☐16 boulders ☐17 cobbles ☐18 pebbles ☐19 granules ☐20 sand ☐21 silt & clay ☐22 Nil
3. Slope: moderate ☑23 gentle ☑24 flat ☐25 irregular ☐26
4. Wave exposure: v. exp. ☐27 exp. ☐28 shelt. ☑29 v. shelt. ☐30
5. Detail: ripples ☐31 sand waves ☐32 banks ☐33 wave/current disturbed ☐34 none ☐35 Irregular pits & furrows
6. Consistency: firm ☑36 shallow sink ☐37 deep sink ☐38 mobile ☐39 powder ☐40
7. Black layer: under 2 cm. ☑41 2-10 cm. ☐42 over 10 cm. ☐43 indistinct grey ☐44 absent ☐45
8. Drainage: good ☐46 standing water ☑47 pools ☐48 S. W. stream ☐49 F. W. stream ☐50
9. Surface life: algae ☑51 eel grass ☐52 mussels ☐53 other ☐54 Occ. stones with fucoids. Also Ulva.
10. Lugworm casts: plentiful ☐55 scattered ☑56 local ☐57 scarce ☐58 absent ☐59 5 m⁻²
11. Holes: over 10 mm. ☐60 3-10 mm. ☐61 under 3 mm. ☐62 | plentiful ☐63 scat. ☐64 scarce ☐65 absent ☑66
12. Tubes: sand ☐67 shell ☑68 mud ☐69 other ☐70 | large ☐71 small ☐72 detached ☐73 Lanice ~1 m⁻²
13. Burrowers: anemones ☐74 worms ☑75 crustacea ☐76 bivalves ☑77 urchins ☐78 sand eels ☐79
14. Drift: mollusc shells ☑80 crab shells ☐81 egg cases ☐82 algae ☐83 eel grass ☐84
15. Activity: birds ☑85 bait ☐86 fishing ☐87 food collection ☐88 field studies ☐89 recreation ☐90 Bird feeding
16. Numbers spp.: plants: high ☐91 med. ☐92 low ☑93 | animals: high ☐94 med. ☐95 low ☑96
17. Numbers indivs.: plants: high ☐97 med. ☐98 low ☑99 nil ☐100 | animals: high ☐101 med. ☐102 low ☑103 nil ☐104

1978

ST. HELENS. Station 2. 18/9/82

Annelida
- Arenicola marina - 5 m⁻²
- Glycera gigantea - 1 (P.E.G. det.)
- Lanice conchilega - 1 m⁻²
- Nephtys hombergi - 1 (P.E.G. det.)
- Perinereis cultrifera - 2 (P.E.G. det.)

Nemertinea
- Nemertine - 1

Mollusca
- Dosinia exoleta - 1

(Empty valves: Dosinia exoleta; Venus fasciata; Lutraria sp.; Gari vespertina)

Echinodermata
- Leptosynapta ? - part of 1.

serial no.	SANDY Shore Field Card	Coastal Area:
S	S.W. Marine Biology Study Group	

Date: 18.9.82 Observer: N.A.H. Locality: NORTH WETHEL, SCILLY

Time: 1240 to B.S.T. Grid Ref.: 00 898 163

Time of L.T.: 1222 hrs

Predicted tide ht.: 0.6 m Pollution (if any): — Designation:

at: Devonport Access: By boat

Distance HW to LW: m

Spit at SE side Norwethel.

Coast: cliff ☐1 low ☑2 dunes ☐3 estuary/inlet ☐4

Cards; total no. 1 whole shore ☐5 upper ☐6 mid ☐7 lower ☐8 low-tide flat ☑9

1. Dominant type: pebbles ☐10 granules ☐11 sand ☑12 silt & clay ☐13 | comparator MED.S 14 calcareous ☐15
2. Secondary ftrs.: reefs ☐16 boulders ☑17 cobbles ☐18 pebbles ☐19 granules ☐20 sand ☐21 silt & clay ☐22 Occ. boulders
3. Slope: moderate ☐23 gentle ☐24 flat ☑25 irregular ☐26
4. Wave exposure: v. exp. ☐27 exp. ☐28 shelt. ☑29 v. shelt. ☐30
5. Detail: ripples ☐31 sand waves ☐32 banks ☐33 wave/current disturbed ☐34 none ☑35
6. Consistency: firm ☑36 shallow sink ☐37 deep sink ☐38 mobile ☐39 powder ☐40
7. Black layer: under 2 cm. ☐41 2-10 cm. ☐42 over 10 cm. ☐43 indistinct grey ☑44 absent ☐45
8. Drainage: good ☐46 standing water ☑47 pools ☐48 S.W. stream ☐49 F.W. stream ☐50
9. Surface life: algae ☑51 eel grass ☐52 mussels ☐53 other ☐54 Ulva, Enteromorpha; filamentous algae
10. Lugworm casts: plentiful ☐55 scattered ☑56 local ☐57 scarce ☐58 absent ☐59 Less than $5 m^{-2}$
11. Holes: over 10 mm. ☑60 3-10 mm. ☐61 under 3 mm. ☐62 | plentiful ☐63 scat. ☑64 scarce ☐65 absent ☐66 Ensis
12. Tubes: sand ☐67 shell ☑68 mud ☐69 other ☐70 | large ☐71 small ☐72 detached ☐73 Lanice $< 5 m^{-2}$
13. Burrowers: anemones ☐74 worms ☑75 crustacea ☐76 bivalves ☑77 urchins ☑78 sand eels ☐79
14. Drift: mollusc shells ☐80 crab shells ☐81 egg cases ☐82 algae ☑83 eel grass ☐84
15. Activity: birds ☐85 bait ☐86 fishing ☐87 food collection ☐88 field studies ☐89 recreation ☐90
16. Numbers spp.: plants: high ☐91 med. ☐92 low ☑93 | animals: high ☐94 med. ☐95 low ☑96
17. Numbers indivs.: plants: high ☐97 med. ☐98 low ☑99 nil ☐100 | animals: high ☐101 med. ☑102 low ☐103 nil ☐104

19?

NORWETHEL. 18/9/82

Annelida

Arenicola marina – less than $5 m^{-2}$

Lanice conchilega – less than $5 m^{-2}$

Nephtys caeca – 4 (P.E.G. det.)

Mollusca

Dosinia sp. – 2

Ensis arcuatus – at least $1 m^{-2}$

Crustacea – Crab – 1

Echinodermata

Echinocardium cordatum – 1

N.C.C. SEDIMENT SHORE RECORDING SHEET

LOCALITY	ABSTRACT	GRID REFERENCE	LATITUDE	LONGITUDE
FOREMAN'S ISLAND, SCILLY		0090016 1	49°57'N	06°19.5'W

SECTOR	SEA AREA	DATE OF VISIT	TIDAL LEVEL	RECORDER
08	519	19/09/82	LWST	N.A.H.

COASTAL SITUATION:		
Sea loch		
Rapids		
Narrows		
Estuary		
Saltmarsh		
Island		
Open coast		
Semi-enclosed		
Enclosed	SITUAT	2
Small bay (<2km across)		
Large bay		
Sheltered inlet		
Lagoon		
Tide channel		
Pocket beach	SITUAT	1
Linear beach		
SHORE TYPE:	dom	2°
Large boulder (>1024mm)		
Medium boulder (512-1024mm)		
Small boulder (256-512mm)		
Cobbles (64-256mm)		
Pebbles (4-64mm)		
Granules (2-4mm)		
Coarse sand ($\frac{1}{2}$-2mm)	X	
Medium sand ($\frac{1}{4}$-$\frac{1}{2}$mm)	X	
Fine sand ($\frac{1}{16}$-$\frac{1}{4}$mm)		
Shelly sand (25% shell)		
Muddy sand		
Mud		
Shingle (mobile & smooth)		
Stony beach		
Black layer		X
ROCK TYPE:	GRANITE	
BIOTA:		
Barren		
Crust. Poly.		
Tellina		
Macoma		
Scrobicularia		
Spisula		
Lanice		
Pullastra		
Echino. Sili.		
Spat. Fasc.		X
COVER:		
Low sparse		
Low moderate		X
Low develop.		
Mid sparse		
Mid moderate		
Mid develop.		
SLOPE:		
Steep (50m HW-LW)		
Moderate (50-150m HW-LW)		
Gentle (150m HW-LW)		
Moderate upper beach, low tide flat		X
Flat (none of above)		
Irregular contours		
INTERTIDAL EXTENT: (m)		100
SUBTIDAL EXTENT: (m)		
HABITAT EXTENT: (m)		250

OFFSHORE FEATURES:		
Islands		X
Reefs		X
Breakwater		
Sandbanks		
Shoal		
COASTAL HEIGHT:		
High		
Moderate		
Low		X
COASTAL BACKING:		
Sand dunes		
Low cliff		
Moderate cliff		
High cliff		
Saltmarsh		
Machair		
Dune/machair		
Sea wall		
Shingle ridge		
Grassland		
ASPECT & PREVAILING WIND:	asp.	wind
North		
North East		
East	X	
South East		
South		
South West		X
West		
North West		
EXPOSURE:		
Very exposed		
Exposed		
Moderate		
Sheltered		X
Very sheltered		
TIME OF E.L.W.S.T.		MOON
SPRING TIDE RANGE (max, m.):		5.0
NEAP TIDE RANGE (min, m,):		2.3
ANNUAL RAINFALL (mm):		830
CURRENT STRENGTH (max speed knots):		
Strong		
Moderate		
Weak		
SALINITY:		
High (>36‰)		
Normal		X
Low (<30‰ throughout shore)		
Stream flowing onto shore		
EASE OF ACCESS:		
Easy		
Moderate		
Difficult		X
METHOD OF ACCESS:	Boat	
DISTANCE FROM NEAREST TOWN: (km)		5
SHORE USAGE:		
Recreation		
Beach fishing		X
Bait digging		X
Shellfish collection		
Aquaculture		
Other		

FOREMAN's ISLAND.

SEDIMENT SHORES CONT.

SCIENTIFIC INTEREST:		EDUCATIONAL INTEREST:	
Habitat variety		Field study	
Species abundant	X	Variety	
Species absent		Other	
Species at or near limit		AMENITY	
Species richness (gd, av, poor)		Attractive beach	
Previous study area		Local resort	
Ornithological interest (type?)		Popular	
Seal haul out/breeding area		Public facilities	
Polluted (type?)		SUBJECTIVE RATING:	
Very clean		Very good	
MNR, LNR or SSSI near/adjacent		Good	X
Fragile		Fair	
Threatened		Poor	

ABSTRACT:

PHOTOGRAPHS TAKEN: X

SHORE PROFILE:

SKETCH MAP OF AREA:

N.C.C. SPECIES RECORDING SHEET

LOCALITY	GRID REFERENCE	LATITUDE	LONGITUDE
FOREMAN'S ISLAND, SCILLY	00901161	49°57'N	06°19·5'W

SECTOR	SEA AREA	DATE OF VISIT	TIDAL LEVEL	RECORDER
08	S1	19 19 09 82	LWST	N.A.H.

Species to be listed in phyla as follows: Algae (Chl, Phae, Rhod), Angiosperms, Porifera, Coelenterata (Hydrozoa, Scyphozoa, Anthozoa), Platyhelminthes, Nemertea, Sipuncula, Annelida, Crustacea (Cirripedia, Malacostraca - isopods, amphipods & decapods), Pycnogonids, Mollusca, (Gastropods - opithobranchs & prosobranchs - Bivalves, Polyplacophora, Cephalopoda), Brachiopoda, Echinodermata, Bryzoa, Tunicates, Vertebrates.

	Abundance		Abundance
COELENTERATA			
Cereus pedunculatus			
ANNELIDA			
Arenicola marina			
Glycera gigantea			
Lanice conchilega			
Loimia medusa			
Marphysa belli			
Nephtys hombergi			
Polynoid commensal with Leptosynapta			
MOLLUSCA			
Dosinia exoleta			
ECHINODERMATA			
Echinocardium cordatum			
Leptosynapta inhaerens			

serial no. S	SANDY Shore Field Card S. W. Marine Biology Study Group	Coastal Area:

Date: 19 / 9 / 82 Observer: N.A.H. Locality: FOREMANS IS., SCILLY

Time: 1235 to BST Grid Ref.: OO 901 159

Time of L.T.: 13.00 hrs

Predicted tide ht.: 0.6 m Pollution (if any): —

at: Devonport Designation:

Distance HW to LW: 150 m Access: By boat

E. side Foreman Is. group.

Coast: cliff ☐1 low ☑2 dunes ☐3 estuary/inlet ☐4

Cards; total no. 3 whole shore ☐5 upper ☐6 mid ☐7 lower ☑8 low-tide flat ☐9 STATION 1

1. Dominant type: pebbles ☐10 granules ☐11 sand ☑12 silt & clay ☐13 | comparator V.C.S. 14 calcareous ☐15
2. Secondary ftrs.: reefs ☐16 boulders ☐17 cobbles ☐18 pebbles ☐19 granules ☐20 sand ☐21 silt & clay ☐22 Nil
3. Slope: moderate ☐23 gentle ☑24 flat ☐25 irregular ☐26
4. Wave exposure: v. exp. ☐27 exp. ☐28 shelt. ☑29 v. shelt. ☐30
5. Detail: ripples ☐31 sand waves ☐32 banks ☐33 wave/current disturbed ☐34 none ☐35 Ridges
6. Consistency: firm ☑36 shallow sink ☐37 deep sink ☐38 mobile ☐39 powder ☐40
7. Black layer: under 2 cm. ☐41 2-10 cm. ☐42 over 10 cm. ☐43 indistinct grey ☑44 absent ☐45
8. Drainage: good ☑46 standing water ☐47 pools ☐48 S. W. stream ☐49 F. W. stream ☐50
9. Surface life: algae ☑51 eel grass ☐52 mussels ☐53 other ☐54 Green, red & brown algae.
10. Lugworm casts: plentiful ☐55 scattered ☑56 local ☐57 scarce ☐58 absent ☐59 Less than $5 m^{-2}$
11. Holes: over 10 mm. ☐60 3-10 mm. ☐61 under 3 mm. ☐62 | plentiful ☐63 scat. ☐64 scarce ☐65 absent ☐66
12. Tubes: sand ☐67 shell ☑68 mud ☐69 other ☐70 | large ☐71 small ☐72 detached ☐73 Lanice $5 m^{-2}$
13. Burrowers: anemones ☑74 worms ☑75 crustacea ☐76 bivalves ☑77 urchins ☐78 sand eels ☐79
14. Drift: mollusc shells ☑80 crab shells ☐81 egg cases ☐82 algae ☑83 eel grass ☐84
15. Activity: birds ☑85 bait ☑86 fishing ☑87 food collection ☐88 field studies ☐89 recreation ☐90 Processing.
16. Numbers spp.: plants: high ☐91 med. ☐92 low ☑93 | animals: high ☐94 med. ☑95 low ☐96
17. Numbers indivs.: plants: high ☐97 med. ☐98 low ☑99 nil ☐100 | animals: high ☐101 med. ☑102 low ☐103 nil ☐104

1978S

FOREMANS IS. Station 1. 19/9/82

Annelida

Arenicola marina – less than $5 m^{-2}$

Capitellid – 1

Glycera gigantea – 1 (P.E.G. det.)

Marphysa belli – 1 (P.E.G. det.)

Lanice conchilega – $5 m^{-2}$

Mollusca

Dosinia exoleta – 1

Echinodermata

Leptosynapta inhaerens + polynoid worm commensal – 1 (P.E.G. det.)

Coelenterata

Cereus pedunculatus – 2

serial no. S	SANDY Shore Field Card S. W. Marine Biology Study Group	Coastal Area:

Date: 19/9/82 Observer: N.A.H Locality: FOREMANS Is., SCILLY
Time: 1300 to BST Grid Ref.: 00 90: 159
Time of L.T.: 13.00 hrs
Predicted tide ht.: 0.6 m Pollution (if any): —
at: Devonport Designation:
Distance HW to LW: 150 m Access: By boat
About 10m. N. of Sta 1, on L.T. flat.
Coast: cliff ☐1 low ☑2 dunes ☐3 estuary/inlet ☐4

Cards; total no. 3 whole shore ☐5 upper ☐6 mid ☐7 lower ☐8 low-tide flat ☑9 STATION 2

1. Dominant type	pebbles ☐10 granules ☐11 sand ☑12 silt & clay ☐13	comparator MED.S 14 calcareous ☐15
2. Secondary ftrs.	reefs ☐16 boulders ☐17 cobbles ☐18 pebbles ☐19 granules ☐20 sand ☐21 silt & clay ☐22	Nil
3. Slope	moderate ☐23 gentle ☐24 flat ☑25 irregular ☐26	
4. Wave exposure	v. exp. ☐27 exp. ☐28 shelt. ☑29 v. shelt. ☐30	
5. Detail	ripples ☐31 sand waves ☐32 banks ☐33 wave/current disturbed ☐34 none ☑35	
6. Consistency	firm ☑36 shallow sink ☐37 deep sink ☐38 mobile ☐39 powder ☐40	
7. Black layer	under 2 cm. ☐41 2-10 cm. ☐42 over 10 cm. ☐43 indistinct grey ☑44 absent ☐45	
8. Drainage	good ☐46 standing water ☑47 pools ☐48 S. W. stream ☐49 F. W. stream ☐50	
9. Surface life	algae ☐51 eel grass ☐52 mussels ☐53 other ☐54	Red & green algae. Incl. Ulva, Enteromorpha
10. Lugworm casts	plentiful ☐55 scattered ☑56 local ☐57 scarce ☐58 absent ☐59	5 m⁻²
11. Holes	over 10 mm. ☐60 3-10 mm. ☐61 under 3 mm. ☐62	plentiful ☐63 scat. ☐64 scarce ☐65 absent ☐66
12. Tubes	sand ☐67 shell ☑68 mud ☐69 other ☐70	large ☐71 small ☐72 detached ☐73 Shell. 5 m⁻²
13. Burrowers	anemones ☑74 worms ☑75 crustacea ☐76 bivalves ☑77 urchins ☐78 sand eels ☐79	
14. Drift	mollusc shells ☑80 crab shells ☐81 egg cases ☐82 algae ☑83 eel grass ☐84	
15. Activity	birds ☑85 bait ☑86 fishing ☑87 food collection ☐88 field studies ☐89 recreation ☐90	Processing
16. Numbers spp.	plants: high ☐91 med. ☐92 low ☑93	animals: high ☐94 med. ☑95 low ☐96
17. Numbers indivs.	plants: high ☐97 med. ☐98 low ☑99 nil ☐100	animals: high ☑101 med. ☐102 low ☐103 nil ☐104

1978

FOREMANS IS. Station 2. 19/9/82

Annelida
Arenicola marina - 5 m⁻²
Lanice conchilega - 5 m⁻²
Loimia medusa - 1 (P.E.G. Det.)
Nephtys hombergi - 2 (P.E.G. det.)

Mollusca
Dosinia exoleta - 2

Echinodermata.
Leptosynapta ? - 1

Coelenterata
Cerus pedunculatus - v. dense over much of beach, say 100 m⁻².

serial no. S	SANDY Shore Field Card S. W. Marine Biology Study Group	Coastal Area:

Date: 19/9/82 Observer: NAH Locality: FOREMANS IS. SCIL
Time: 1315 to BST Grid Ref.: 00 899 161
Time of L.T.: 1300 hrs
Predicted tide ht.: 0.2 m Pollution (if any): Designation:
at: Devonport Access: By boat
Distance HW to LW: 100 m
At N. end Foremans Is. Sandy beach between rocks
Coast: cliff ☐1 low ☑2 dunes ☐3 estuary/inlet ☐4

Cards; total no. 3 whole shore ☐5 upper ☐6 mid ☐7 lower ☑8 low-tide flat ☐9 STATION 3

1. Dominant type: pebbles ☐10 granules ☐11 sand ☑12 silt & clay ☐13 | comparator V.C.S. 14 calcareous ☐15 Grade varied
2. Secondary ftrs.: reefs ☐16 boulders ☐17 cobbles ☐18 pebbles ☐19 granules ☐20 sand ☐21 silt & clay ☐22 Nil.
3. Slope: moderate ☐23 gentle ☐24 flat ☑25 irregular ☐26
4. Wave exposure: v. exp. ☐27 exp. ☐28 shelt. ☑29 v. shelt. ☐30
5. Detail: ripples ☐31 sand waves ☐32 banks ☐33 wave/current disturbed ☐34 none ☐35
6. Consistency: firm ☑36 shallow sink ☐37 deep sink ☐38 mobile ☐39 powder ☐40
7. Black layer: under 2 cm. ☐41 2-10 cm. ☐42 over 10 cm. ☐43 indistinct grey ☑44 absent ☐45
8. Drainage: good ☑46 standing water ☐47 pools ☐48 S.W. stream ☐49 F.W. stream ☐50
9. Surface life: algae ☑51 eel grass ☐52 mussels ☐53 other ☐54 Ulva etc.
10. Lugworm casts: plentiful ☑55 scattered ☐56 local ☐57 scarce ☐58 absent ☐59 10-20 m^{-2}
11. Holes: over 10 mm. ☐60 3-10 mm. ☐61 under 3 mm. ☐62 | plentiful ☐63 scat. ☐64 scarce ☐65 absent ☑66
12. Tubes: sand ☐67 shell ☑68 mud ☐69 other ☐70 | large ☐71 small ☐72 detached ☐73 Lanice 10 m^{-2}
13. Burrowers: anemones ☑74 worms ☑75 crustacea ☐76 bivalves ☑77 urchins ☑78 sand eels ☐79
14. Drift: mollusc shells ☐80 crab shells ☐81 egg cases ☐82 algae ☐83 eel grass ☐84
15. Activity: birds ☐85 bait ☐86 fishing ☐87 food collection ☐88 field studies ☐89 recreation ☐90
16. Numbers spp.: plants: high ☐91 med. ☐92 low ☑93 | animals: high ☐94 med. ☑95 low ☐96
17. Numbers indivs.: plants: high ☐97 med. ☐98 low ☑99 nil ☐100 | animals: high ☐101 med. ☑102 low ☐103 nil ☐104

1978

FOREMANS IS. Station 3. 19/9/82

Annelida.
Arenicola marina – 10-20 m^{-2}
Glycera gigantea – 4 (P.E.G. det.)
Lanice conchilega – 10 m^{-2}

Mollusca
Dosinia exoleta – 2
Ensis – not seen
Venus fasciata – 1, on surface.

Echinodermata
Echinocardium cordatum – several, in a patch at L.W.
Leptosynapta inhaerens – 1 (P.E.G. det.)

Coelenterata
Cerus pedunculatus – at low densities.

N.C.C. SEDIMENT SHORE RECORDING SHEET

LOCALITY	ABSTRACT	GRID REFERENCE	LATITUDE	LONGITUDE
PENTLE BAY, TRESCO, SCILLY		00903145	49° 57'N	06° 19'W

SECTOR	SEA AREA	DATE OF VISIT	TIDAL LEVEL	RECORDER
08	S19	200982	M LW~~S~~	N.A.H.

COASTAL SITUATION:		
Sea loch		
Rapids		
Narrows		
Estuary		
Saltmarsh		
Island		
Open coast		
Semi-enclosed SITUAT 2		X
Enclosed		
Small bay (<2km across) SITUAT. 1		X
Large bay		
Sheltered inlet		
Lagoon		
Tide channel		
Pocket beach		
Linear beach		

SHORE TYPE:	dom	2°
Large boulder (>1024mm)		
Medium boulder (512-1024mm)		
Small boulder (256-512mm)		
Cobbles (64-256mm)		
Pebbles (4-64mm)		
Granules (2-4mm)		
Coarse sand ($\frac{1}{2}$-2mm)		
Medium sand ($\frac{1}{4}$-$\frac{1}{2}$mm)	X	
Fine sand ($\frac{1}{16}$-$\frac{1}{4}$mm)		X
Shelly sand (25% shell)		
Muddy sand		
Mud		
Shingle (mobile & smooth)		
Storm beach		
Black layer		

ROCK TYPE: GRANITE

BIOTA:	
Barren	
Crust. Poly.	
Tellina	X
Macoma	
Scrobicularia	
Spisula	
Lanice	
Pullastra	
Echino. Sili.	
Spat. Fasc.	

COVER:	
Low sparse	X
Low moderate	
Low develop.	
Mid sparse	
Mid moderate	
Mid develop.	

SLOPE:	
Steep (50m HW-LW)	
Moderate (50-150m HW-LW)	
Gentle (150m HW-LW)	
Moderate upper beach, low tide flat	X
Flat (none of above)	
Irregular contours	

INTERTIDAL EXTENT: (m)	300
SUBTIDAL EXTENT: (m)	
HABITAT EXTENT: (m)	900

OFFSHORE FEATURES:	
Islands	X
Reefs	
Breakwater	
Sandbanks	X
Shoal	X

COASTAL HEIGHT:	
High	
Moderate	
Low	X

COASTAL BACKING:	
Sand dunes	X
Low cliff	
Moderate cliff	
High cliff	
Saltmarsh	
Machair	
Dune/machair	
Sea wall	
Shingle ridge	
Grassland	

ASPECT & PREVAILING WIND:	asp.	wind
North		
North East		
East	X	
South East		
South		
South West		X
West		
North West		

EXPOSURE:	
Very exposed	
Exposed	
Moderate	
Sheltered	X
Very sheltered	

TIME OF E.L.W.S.T.	NOON
SPRING TIDE RANGE (max, m.):	5.0
NEAP TIDE RANGE (min, m,):	2.3
ANNUAL RAINFALL (mm):	830

CURRENT STRENGTH (max speed knots):	
Strong	
Moderate	
Weak	

SALINITY:	
High (>36‰)	
Normal	X
Low (<30‰ throughout shore)	
Stream flowing onto shore	

EASE OF ACCESS:	
Easy	
Moderate	X
Difficult	
METHOD OF ACCESS: Boat / walk	
DISTANCE FROM NEAREST TOWN: (km)	3

SHORE USAGE:	
Recreation	X
Beach fishing	
Bait digging	X
Shellfish collection	
Aquaculture	
Other	

PENTLE BAY

SEDIMENT SHORES CONT.

SCIENTIFIC INTEREST:		EDUCATIONAL INTEREST:	
Habitat variety		Field study	
Species abundant		Variety	
Species absent		Other	
Species at or near limit		AMENITY	
Species richness (gd, av, poor)	POOR	Attractive beach	X
Previous study area		Local resort	
Ornithological interest (type?)		Popular	
Seal haul out/breeding area		Public facilities	
Polluted (type?)		SUBJECTIVE RATING:	
Very clean		Very good	
MNR, LNR or SSSI near/adjacent		Good	
Fragile		Fair	X
Threatened		Poor	

ABSTRACT:

PHOTOGRAPHS TAKEN: X

SHORE PROFILE:

SKETCH MAP OF AREA:

N.C.C. SPECIES RECORDING SHEET

LOCALITY	GRID REFERENCE	LATITUDE	LONGITUDE
PENTLE BAY, TRESCO, SCILLY	0090314 S	49°57'N	06°19'W

SECTOR	SEA AREA	DATE OF VISIT	TIDAL LEVEL	RECORDER
08	S19	20098 2	MLW	N.A.H.

Species to be listed in phyla as follows: Algae (Chl, Phae, Rhod), Angiosperms, Porifera, Coelenterata (Hydrozoa, Scyphozoa, Anthozoa), Platyhelminthes, Nemertea, Sipuncula, Annelida, Crustacea (Cirripedia, Malacostraca - isopods, amphipods & decapods), Pycnogonids, Mollusca, (Gastropods - opithobranchs & prosobranchs - Bivalves, Polyplacophora, Cephalopoda), Brachiopoda, Echinodermata, Bryzoa, Tunicates, Vertebrates.

	Abundance		Abundance
ANNELIDA			
Arenicola marina			
Lanice conchilega			
Nephtys cirrosa			
Nephtys hombergi			
MOLLUSCA			
Tellina tenuis.			
ECHINODERMATA			
Echinocardium sp.			

serial no. S	SANDY Shore Field Card S. W. Marine Biology Study Group	Coastal Area:

Date: 20 / 9 / 82 Observer: N.A.H. Locality: PENTLE BAY, TRESCO

Time: 1300 to BST Grid Ref.: OO 904 144

Time of L.T.: 1306 hrs

Predicted tide ht.: 0.7 * m Pollution (if any): —

at: Devonport Designation:

Distance HW to LW: 300 m Access: 1 mile from landing point on Tresco

* Low water today scarcely dropped below top of Laminaria zone (≈ +1m)

Coast: cliff ☐1 low ☑2 dunes ☑3 estuary/inlet ☐4

Cards; total no. 2 whole shore ☐5 upper ☐6 mid ☐7 lower ☐8 low-tide flat ☑9 STATION 1.

1. Dominant type: pebbles ☐10 granules ☐11 sand ☑12 silt & clay ☐13 | comparator MED.S. 14 calcareous ☐15
2. Secondary ftrs.: reefs ☐16 boulders ☐17 cobbles ☐18 pebbles ☐19 granules ☐20 sand ☐21 silt & clay ☐22 Nil
3. Slope: moderate ☐23 gentle ☐24 flat ☑25 irregular ☐26
4. Wave exposure: v. exp. ☐27 exp. ☐28 shelt. ☑29 v. shelt. ☐30
5. Detail: ripples ☐31 sand waves ☐32 banks ☐33 wave/current disturbed ☐34 none ☐35 Slight irregular undulations
6. Consistency: firm ☑36 shallow sink ☐37 deep sink ☐38 mobile ☐39 powder ☐40
7. Black layer: under 2 cm. ☐41 2-10 cm. ☐42 over 10 cm. ☐43 indistinct grey ☑44 absent ☐45
8. Drainage: good ☐46 standing water ☑47 pools ☐48 S. W. stream ☐49 F. W. stream ☐50
9. Surface life: algae ☑51 eel grass ☐52 mussels ☐53 other ☐54 Ulva on stones.
10. Lugworm casts: plentiful ☑55 scattered ☐56 local ☐57 scarce ☐58 absent ☐59 10 m^{-2}
11. Holes: over 10 mm. ☐60 3-10 mm. ☐61 under 3 mm. ☐62 | plentiful ☐63 scat. ☐64 scarce ☐65 absent ☑66
12. Tubes: sand ☐67 shell ☑68 mud ☐69 other ☐70 | large ☐71 small ☐72 detached ☐73 Not at station. A few further S.
13. Burrowers: anemones ☐74 worms ☑75 crustacea ☐76 bivalves ☑77 urchins ☐78 sand eels ☐79
14. Drift: mollusc shells ☐80 crab shells ☐81 egg cases ☐82 algae ☐83 eel grass ☐84
15. Activity: birds ☑85 bait ☑86 fishing ☐87 food collection ☐88 field studies ☐89 recreation ☑90
16. Numbers spp.: plants: high ☐91 med. ☐92 low ☑93 | animals: high ☐94 med. ☐95 low ☑96
17. Numbers indivs.: plants: high ☐97 med. ☐98 low ☑99 nil ☐100 | animals: high ☐101 med. ☐102 low ☑103 nil ☐104

1978

PENTLE BAY, TRESCO. Station 1. 20/9/82

Annelida

Arenicola marina - 10 m^{-2}

Lanice conchilega - scarce (< 1 m^{-2} nearby)

Nephtys cirrosa - 1 (P.E.G. det.)

Polychaetes (other than Arenicola) general scarce

Mollusca

Tellina tenuis - ca. 2 m^{-2}

Echinodermata

Echinocardium sp. - empty tests nearby.

serial no. S	SANDY Shore Field Card S. W. Marine Biology Study Group	Coastal Area:

Date: 20/9/82 Observer: NAH Locality: PENTLE BAY, TRESCO

Time: 1330 to BST Grid Ref.: 00 902 142

Time of L.T.: 1336 * hrs

Predicted tide ht.: 0.7 * m Pollution (if any): —

at: Devonport Designation:

Distance HW to LW: m Access: 1 mile from landing point on Tresco.

* Actual hgt. ca + 1m.

Coast: cliff ☐1 low ☑2 dunes ☑3 estuary/inlet ☐4

Cards; total no. 2 whole shore ☐5 upper ☐6 mid ☐7 lower ☑8 low-tide flat ☑9 STATION 2

1. Dominant type — pebbles ☐10 granules ☐11 sand ☑12 silt & clay ☐13 | comparator F.S. 14 calcareous ☐15
2. Secondary ftrs. — reefs ☐16 boulders ☐17 cobbles ☐18 pebbles ☐19 granules ☐20 sand ☐21 silt & clay ☐22 Nil
3. Slope — moderate ☐23 gentle ☑24 flat ☐25 irregular ☐26
4. Wave exposure — v. exp. ☐27 exp. ☐28 shelt. ☑29 v. shelt. ☐30
5. Detail — ripples ☐31 sand waves ☐32 banks ☐33 wave/current disturbed ☐34 none ☐35 Arenicola casts
6. Consistency — firm ☑36 shallow sink ☐37 deep sink ☐38 mobile ☐39 powder ☐40
7. Black layer — under 2 cm. ☐41 2-10 cm. ☐42 over 10 cm. ☐43 indistinct grey ☑44 absent ☐45
8. Drainage — good ☐46 standing water ☑47 pools ☐48 S. W. stream ☐49 F. W. stream ☐50
9. Surface life — algae ☐51 eel grass ☐52 mussels ☐53 other ☐54 Nil
10. Lugworm casts — plentiful ☑55 scattered ☐56 local ☐57 scarce ☐58 absent ☐59 10 m^{-2}
11. Holes — over 10 mm. ☐60 3-10 mm. ☐61 under 3 mm. ☐62 | plentiful ☐63 scat. ☐64 scarce ☐65 absent ☑66
12. Tubes — sand ☐67 shell ☑68 mud ☐69 other ☐70 | large ☐71 small ☐72 detached ☐73 Lanice 1 m^{-2}
13. Burrowers — anemones ☐74 worms ☑75 crustacea ☐76 bivalves ☑77 urchins ☑78 sand eels ☐79
14. Drift — mollusc shells ☐80 crab shells ☐81 egg cases ☐82 algae ☑83 eel grass ☐84
15. Activity — birds ☑85 bait ☑86 fishing ☐87 food collection ☐88 field studies ☐89 recreation ☑90
16. Numbers spp. — plants: high ☐91 med. ☐92 low ☑93 | animals: high ☐94 med. ☐95 low ☑96
17. Numbers indivs. — plants: high ☐97 med. ☐98 low ☑99 nil ☐100 | animals: high ☐101 med. ☐102 low ☑103 nil ☐104

1978S

PENTLE BAY, TRESCO. Station 2. 20/9/82

Annelida.

Arenicola marina - 10 m^{-2}

Nephtys hombergi - 2 (P.E.G. det.)

Lanice conchilega - 1 m^{-2}

Nemertinea

Nemertine - 1

Mollusca

Tellina tenuis - 2 m^{-2}

Tellina squalida - empty valve

Echinodermata

Echinocardium cordatum (probably - broken) - 2

TELLINA communities

These occur on sandy beaches where there is sufficient protection from wave action to allow the development of a population of the bivalve mollusc Tellina tenuis. Another bivalve, Donax vittatus, may also occur, but this has successful spatfalls only at intervals of several years, so populations are liable to severe fluctuations.

The intertidal extent of Tellina tenuis appears to be related to drainage. Where the sand is well drained during the low tide period, T. tenuis tends to occur only towards low water mark, but where the sand stays wet it extends up the shore to above half tide mark. Other species present include those of the CRUSTACEAN-POLYCHAETE community, but at higher density, and with the addition of further species. Arenicola marina is almost invariably present, and other polychaetes include Chaetozone setosa, Magelona papillicornis, Nephtys caeca, Pygospio elegans, Scololepis spp., Spio filicornis and Travisia forbesi. An additional amphipod is Atylus swammerdami.

TELLINA communities are well developed at mid to low tide levels in clean sandy beaches in land-locked bays. The species mostly appear to be tolerant of slightly brackish conditions, but the community does not penetrate far into estuaries because it is dependent on the presence of sands having a relatively low silt plus clay content.

Descriptions of sediment communities, from Bishop and Holme (1980).

ARENICOLA* communities

These occur in muddy sand, often within harbours and estuaries. The need to differentiate between communities in muddy sand as opposed to mud has necessitated a division of the MACOMA community of Petersen and later workers into an ARENICOLA community in muddy sand and a SCROBICULARIA community in mud.

Arenicola marina itself occurs throughout the intertidal zone, where it inhabits a wide range of sediment grades, ranging from almost pure mud to clean sand, but populations attain their optimum development under intermediate conditions, in muddy sand.

The ARENICOLA community contains some of the same species as the TELLINA community, but with the addition of further species of polychaete and bivalve mollusc. Among species of cleaner sand which are absent or less common are a number of small crustaceans, and Tellina tenuis itself.

Typical species of the ARENICOLA community include the polychaetes Audouina tentaculata, Nephtys cirrosa and N. hombergi, Scoloplos armiger, Sigalion mathildae, and Spiophanes bombyx, and the bivalves Cerastoderma edule and Macoma balthica. Hydrobia ulvae occurs on the surface of the sediment, and on plants of Zostera noltii, which occurs in the upper part of the intertidal zone in some estuaries.

A black layer of ferrous sulphide is usually present below the surface, at a depth depending on the extent of reducing conditions in the sand. Where there is much organic matter, or a poor circulation of water through the sand, the black layer is well developed, and occurs within a few centimetres of the surface. Under less extreme conditions, there is a grey layer at 10-20 cm depth. Reducing conditions favour the occurrence of certain polychaete worms, e.g. cirrátulids, but tend to be avoided by bivalve molluscs.

Descriptions of sediment communities, from Bishop and Holme (1980).

*Referred to in this report as a MACOMA community, in accordance with the NCC data recording sheets.

PULLASTRA communities

PULLASTRA communities occur in muddy gravel, sometimes with an admixture of sand, on the lower shore in the outer parts of estuaries, and in marine inlets. Venerupis pullastra, the bivalve which gives its name to the community, is not necessarily present, and there appear to be considerable variations in the composition of this 'community'. Most of the literature descriptions of benthic communities omit reference to muddy gravel, and Holme (1966) found it necessary to define such a community to describe populations in such deposits on the bed of the English Channel.

Venerupis pullastra sometimes occurs in large numbers in intertidal muddy gravels, associated with which are the bivalves Mya truncata, and in less muddy areas, Ensis arcuatus. Under brackish conditions Mya arenaria may also be present. Where the ground is not too stony a number of sedentary polychaete worms occur, including Amphitrite edwardsi and A. johnstoni, Branchiomma vesiculosum, Myxicola infundibulum, and Sabella pavonina. Species of the sipunculan Goldfingia may be present, and under exceptionally favourable conditions in marine inlets the burrowing prawns Upogebia deltaura and U. stellata occur at extreme low water. The anemone Cereus pedunculatus may be common attached to stones below the surface of the substratum.

Some of the most interesting faunistic assemblages in the marine inlets of the south-west can be classified as PULLASTRA communities, and a more detailed description of one such habitat in the Yealm estuary is given in the Plymouth Marine Fauna (Marine Biological Association, 1957, p. xxxii).

SPATANGUS-FASCIATA communities

Like the previous community, this is equivalent to one of Ford's (1923) offshore communities (Table 2). On the shore it occurs at low tide in clean gravel and shell gravels, but only under sheltered conditions. Because deposits of this grade are usually associated with wave-exposed or current-swept areas, this community is rare and localised on the shore, which makes the sites where it occurs between tide marks all the more important. The only places where this community is at all widespread is in the coarse sands derived from the granite in Scilly, and in the maerl deposits formed by calcareous algae, principally on sites on the west coast of Scotland. Within the British Isles this community is best developed in maerl deposits on the west coast of Ireland.

The characteristic species of this community are the heart urchin Spatangus purpureus and the bivalve Venus fasciata. Although often present in offshore deposits, these species only occur occasionally on the shore. Among characteristic species are a range of bivalve molluscs, notably Ensis arcuatus, Dosinia exoleta, Gari tellinella, Lutraria angustior, Spisula solida, Tellina donacina, and Venerupis rhomboides. Echinoderms include the holothurian Leptosynapta inhaerens, and the gravel-living Echinocardium flavescens and E. pennatifidum which occur, rarely, in addition to Spatangus purpureus. In the Scilly Isles the cephalochordate Amphioxus lanceolatus has been found intertidally in gravel.