

THE INTERTIDAL INVERTEBRATE FAUNA OF SOMERSET

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INTRODUCTION

The fauna list as presented here is a summary of many people's observations over many years yet, at the same time, it is very much a work in progress. I confidently anticipate that its publication will stimulate a wave of new records. In offering it, I am acutely aware that the traditional criticism "could have done better" would be highly appropriate; many groups are woefully under recorded. In my defence, I can only say that I was never employed to compile the list; it arose as a by-product of my employment to run a Field Centre.

Together, the Bristol Channel and Severn Estuary form the largest inlet in the coastline of the British Isles and the largest estuarine system. The area has long been known for its spectacular tidal range (the largest in Europe), extensive shores and muddy water. But, whilst the estuary has long been recognised as being of national and international importance for wintering waders and wildfowl (e.g. Salmon and Fox 1994) – which should, surely, have suggested healthy populations of at least some intertidal invertebrates – the shore fauna has generally been regarded as 'impoverished'. For example, Swanton (1912) wrote "The molluscan fauna of the coast is apparently poor in species; the polluted waters of the Bristol Channel are probably inimical to molluscan life". More accurately, he continued "... but I suspect the paucity of records is to be partly explained by the absence of observers". Ninety-nine species are listed there.

Victorian naturalists concentrated on collecting animals and plants; there were still many 'new' species to be described. Naturally, those interested in life on the seashore chose to visit attractive places with a rich fauna and flora. Seaside towns, accessible by rail, well provided with hotels and restaurants on the one hand and with local fishing boats on the other, drew most of their attention. Thus, in the Bristol Channel, interest concentrated on Ilfracombe and Tenby whilst in historic Somerset all records from that period seem to be from Weston-super-Mare, Clevedon, Brean, Burnham or Minehead.

Serious attention to the littoral fauna of the Bristol Channel began in the late 1930s, under the impetus of Professor C. M. Yonge of Bristol University. The 'mission statement' was well expressed (Yonge 1938) in his 'General Introduction' to *Studies on the Biology of the Bristol Channel* – a series of papers that was published, mostly in the *Proceedings of the Bristol Naturalists' Society* but some elsewhere, from 1938 until 1957: "There is no region around the shores of Great Britain of greater intrinsic interest than the Bristol Channel and the Estuary of the River Severn ... Despite the obvious interest of this region, practically no work has been done upon it ... It is clearly one of the functions of the Department of Zoology in the University to remedy this state of affairs".

Not surprisingly, the first paper in the series dealt with a site close to Bristol – Portishead (Purchon 1938) – but the third paper concerned Steephelm (Yonge and Lloyd 1939), which was visited on a weekend in July 1938 (far from the lowest tides of that year – the shingle spit is certainly not "devoid of life" on a truly low tide). Mr R. Bassindale (known as 'Bass'), a lecturer at the University, published his survey of Somerset shores as far west as Blue Anchor (Bassindale 1941, with corrections 1942). He extended his survey to Porlock Bay over a period of equinoctial spring tides in March 1940 (Bassindale 1943c). These papers form the baseline of the present summary and any rational appreciation of the practical difficulties that he must have overcome – travel and access to the coast in wartime, plus the non-existence of any field guides which meant that he had to collect and preserve specimens of almost everything for subsequent laboratory identification – leaves us immensely grateful for his determination.

The final paper in the series (Bassindale and Barrett 1957) was entitled *The Dale Fort Marine Fauna*. The Fort, one of a series built in the 1850s to defend Milford Haven from a perceived invasion threat by Napoleon III, has been run as a Field Centre by the Field Studies Council since 1948 and Mr Bassindale had been accustomed to lead an annual course there for Bristol University

zoology students. The fauna list was based on the specimens collected and identified by his students, supplemented with data from a card index of species recorded by other academic visitors to the Centre; some leading field courses and others collecting specimens in connection with their PhD theses (at least one of which was on the parasites of sea birds, whose immature stages live in fish or invertebrates). Not surprisingly, the card index concentrated on rare or unusual beasts collected from the most accessible sites; common and widespread species remained virtually unrecorded.

On my appointment to the Field Centre staff in 1963, John Barrett (the Warden) asked me to produce a revised edition (Crothers 1966). My task was to visit all the accessible shores around the Dale Peninsula, to find, identify and record the local distribution of the commoner invertebrate fauna. A better apprenticeship for an aspiring marine biologist would be hard to imagine; it was a task greatly assisted by 'Bass' on his regular visits and, of course, by John Barrett himself. Older readers will remember that Barrett and Yonge (1958) was the original *Collins Pocket Guide to the Seashore*.

In 1967, I was appointed Warden of Nettlecombe Court, a new Field Centre being established on the edge of the Exmoor National Park in west Somerset. Not surprisingly, as a Foot-and-Mouth scare prevented access to most other habitats during that autumn and winter, I began a survey of the rocky sea shores of potential use on field courses to be run from my Centre. Sites had to be within easy walking distance from a place where a coach could park (and turn round).

It was immediately obvious that Gore Point, the western limit of Porlock Bay, was the richest site, Hurlstone Point (the eastern extremity of the same bay) the most accessible exposed shore, and Helwell Bay (east of Watchet Harbour) the most convenient sheltered site. Most of my observations from 1967 to 2003 relate to these sites. Almost all my plankton hauls were taken in Watchet harbour because it was the easiest/safest place to launch my dinghy and to embark/disembark students.

Up until the 1960s, professional marine biologists tended to concentrate their attention on fully-marine sites (Plymouth, Isle of Man, Isle of Cumbrae, Oban, Robin Hood's Bay, Milford Haven etc.) but the early 1970s saw a series of academic meetings that resulted in the formation of the Estuarine and Brackish-Water Sciences Association (now the Estuarine and Coastal

Sciences Association). At those meetings, I met Drs C. R. Boyden and C. Little (Bristol University) and Dr C. Mettam (University College Cardiff) and we jointly decided to compile an intertidal invertebrate fauna of the Severn Estuary (Boyden *et al.* 1977). Chris Mettam provided almost all the data for the Welsh shores and I contributed nothing about the upper estuary. Charlie Boyden and Colin Little had studied the soft sediments of the English shore, whilst I had concentrated on hard substrates.

During preparation of that paper, the four authors made joint visits to many Somerset shores for the purpose of collecting and identifying the fauna, but following its publication (Boyden *et al.* 1977) no further shore visits were made for that primary purpose. As part of my job, I regularly took parties of students (a technical term; the age range was from c.8 to c.80 years old) onto the shores, sometimes for the purpose of demonstrating the range of animal life but much more often to investigate patterns of distribution. Unfortunately, when you are helping a class to identify their catch, you have little time for identification yourself; especially with adult students who cannot be packed off to bed at a sensible hour!

Understanding of the faunal distribution patterns in the estuary was enhanced during a workshop, held at Nettlecombe Court in 1989 (Crothers *et al.* 1994), which tried to compare the Bristol Channel with the Bay of Fundy and La Rance. Mettam (1994) described the Welsh coast whilst Crothers and Hayns (1994) included information on the algae.

The majority of my post-1970s records relate to those species that could be easily identified in the field whilst I was engaged in field teaching or when collecting research data in connection with crabs (Crothers and Crothers 1983), dog-whelks (Crothers 1985), edible winkles (Crothers 1992) or common top-shells (Crothers 2001).

On the other hand, the site that has attracted the most 'applied' attention is undoubtedly Hinkley Point because of the nuclear power stations. Several detailed surveys have been made of the foreshore (e.g. Bremner *et al.* 2011) and full advantage has been taken of the opportunity to sample the wealth of marine material filtered from the cooling water stream on the screens. (Legislation in place at the time that Hinkley A and B were constructed had made it illegal to return any damaged biological material to the sea; as it would have been impossible to guarantee that an animal caught on the screens had not been damaged in some way, the entire 'catch' went for fertiliser.)

There probably is a natural barrier to marine species spreading further up the Severn Estuary, but the intensive sampling at Hinkley Point (Bremner *et al.* 2011) has boosted the ‘assumed fauna’ to the west (Fig. 2) whilst neglecting that further east, which is very probably under-recorded.

Just as more fish have been caught in the warm outflow from the cooling stream (because more sea anglers have fished there), so more species have been recorded on the shore at Hinkley Point than anywhere else east of Kilve because more professional biologists have spent more time working there.

The Wet Stuff

The main physical and chemical features of the estuary were described by Bassindale (1942b, 1943a, 1943b, 1955) and revised in part by Langston *et al.* (2003). The spectacular tidal range is accentuated by the funnel shape of the whole inlet. The mean spring tidal range increases from about 8 metres at Lundy, via 10.5 m at Watchet to 12.3 m at Avonmouth, reaching its maximum under the old Severn Bridge (14.6 m in 1976).

Surface salinity of the water around Lundy remains roughly constant at 35‰ NaCl (the figure generally accepted as normal for sea water around the British Isles), but becomes increasingly variable up the estuary so that, off Avonmouth, it fluctuates between 10 and 27‰.

The rivers flowing into the estuary contribute about a million tonnes of sediment to the estuarine water *per annum* – a small part of the 30 million tonnes of “instantaneously mobile fine sediment load on spring tides” (Kirby 1994). This material forms a wedge that moves up and down the estuary with the tide, settling out on the bottom at slack water and being stirred up again as the tide picks up speed. ‘Yottin’ can be alarming; you anchor in a depth of water that, anywhere else, would seem excessive only to discover that as the tide rushes out like a river in spate (experience this off Flatholm!), the echo sounder shows the sea bed rising under your keel!

In Porlock Bay, as low water approaches, the ebbing tide of muddy water pours away to the west out in the Channel whilst, gradually, a widening tongue of ‘blue’ water begins to extend eastwards (from left to right) close inshore as the flood tide pushes clearer, more saline, water into the Bay. In calm weather the contact zone between the two bodies of water is clearly visible (and the boats of

sea anglers come and anchor in it). As a result of this phenomenon, the western side of Hurlstone Point experiences more saline, less turbid water for appreciably longer than the eastern side.

The same is probably true (if less conspicuous) of all the headlands along the Somerset coast. Marine rocky shore species tend to reach their upstream limit on the seaward side of a headland. I do not know whether the opposite is true for the western limit of estuarine species.

The Hard (and the softer) Stuff

The Somerset coast may be considered in three sections: the steep-to shores of Exmoor, west of Minehead North Hill; the more extensive shores between Minehead and Steart; and the west-facing shores from Steart Point to Sand Point.

The eastern extremity of the Exmoor coastline is formed from the Hangman Grit – one of the hardest facies of the (Devonian) Old Red Sandstone. The land falls steeply from over 300 m. to the sea but only at Hurlstone Point is the bedrock exposed over all the shore. Everywhere else, between Glenthorne and Minehead, at least part of the shore is covered with cobbles, boulders or a storm beach of mobile shingle. Gore Point, the western extremity of Porlock Bay, is formed entirely of cobbles and boulders, the remains of a periglacial outwash fan. The storm beach is at its thinnest at First Rocks, some hundreds of metres to the west.

Across Porlock Bay, below the storm beach (Bossington Beach) there is no exposure of the bedrock and the shore is composed of cobbles embedded in the stiff clay of a submerged forest dating from the last interglacial. There are many tree stumps *in situ* and the bones of an Aurochs (*Bos primigenius*) have been dug out.

There are two beaches of coarse sand between Hurlstone Point and Minehead; Selworthy Sand – immediately east of Hurlstone Point, and seemingly almost devoid of life – and Greenaleigh Bay, just west of Greenaleigh Point, which supports a distinctive (if sparse) fauna. Minehead Harbour is muddy but the rest of the bay is muddy sand with patches of gravel. Warren Point extends seawards as a boulder/cobble spit, forming a hazard to navigation, especially approaching low tide.

There is no exposure of bedrock to the east until the eastward extremity of Blue Anchor Bay. At the western end of the bay, Dunster Beach, the upper shore is a mixture of sand, muddy sand and shingle/small cobbles which progressively gives way to

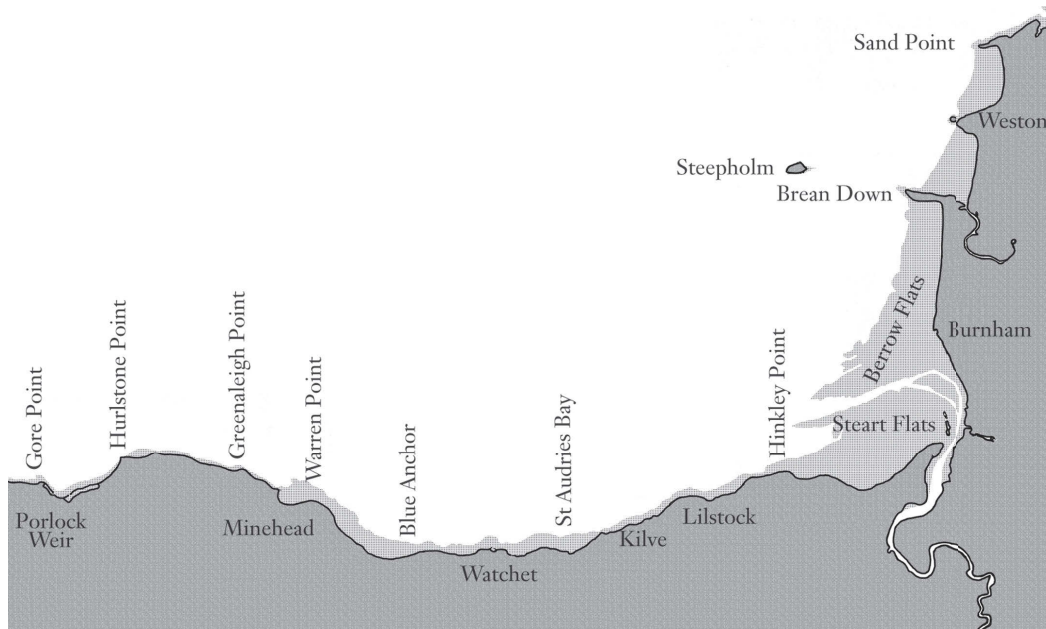


Fig. 1. The Somerset Coast, and the places most frequently mentioned in the text

firm sand as one moves eastwards, the lower shore often being composed of fine mud. In still weather, the transition from liquid mud to muddy liquid at the water's edge is not well marked.

The bedrock between Blue Anchor and the mouth of the River Parrett is a complicated (heavily folded and frequently faulted) sequence of soft Jurassic and Triassic sediments that has been eroded to leave an extensive wave-cut platform backed by nearly-vertical low cliffs. In some places – notably the Red Marls at Blue Anchor and the even softer sediments at the Doniford end of Helwell Bay – the cliffs are receding at about a metre a year. East of Watchet, the Blue Lias forms alternating beds of limestone and shale, both containing many fossils.

The west-facing coast, running north from the mouth of the River Parrett, comprises extensive beaches backed by sand dunes and separated by lens-shaped Carboniferous Limestone outliers – Brean Down, Birnbeck Head and Middle Hope. The beaches are firm sand at the top, becoming ever muddier lower down until the liquid mud/muddy liquid transition is reached. It would, to put it mildly, be very foolish to venture out onto these mudflats without taking special precautions.

AN OVERVIEW OF THE FAUNA

The intertidal zone (the sea shore) is, by definition, the area of mud, sand, rock, concrete or whatever that is sometimes covered and sometimes uncovered by the sea. Human observations of the invertebrate fauna are usually concentrated on the daytime periods of low tide but the fauna is composed almost entirely of marine species that have colonised the area from the seabed beneath the tidemarks. These animals are usually most active at high tide and/or at night and the day-time low-tide periods are times to be endured – especially in warm sunny weather.

The shore is not a single habitat but a complex mixture of many microhabitats, each of which has been colonised by its own particular assemblage of algal, lichen and animal species. Of the latter, some are to be seen (at low tide by day) on the open rock surface but many others shelter from desiccation in crevices, between cobbles or under boulders. Still others live in burrows, of various degrees of permanence, in sand, mud, stiff clay or soft rock. Each species will only be found where its own particular requirements are available – a fact perhaps most obviously true in the case of

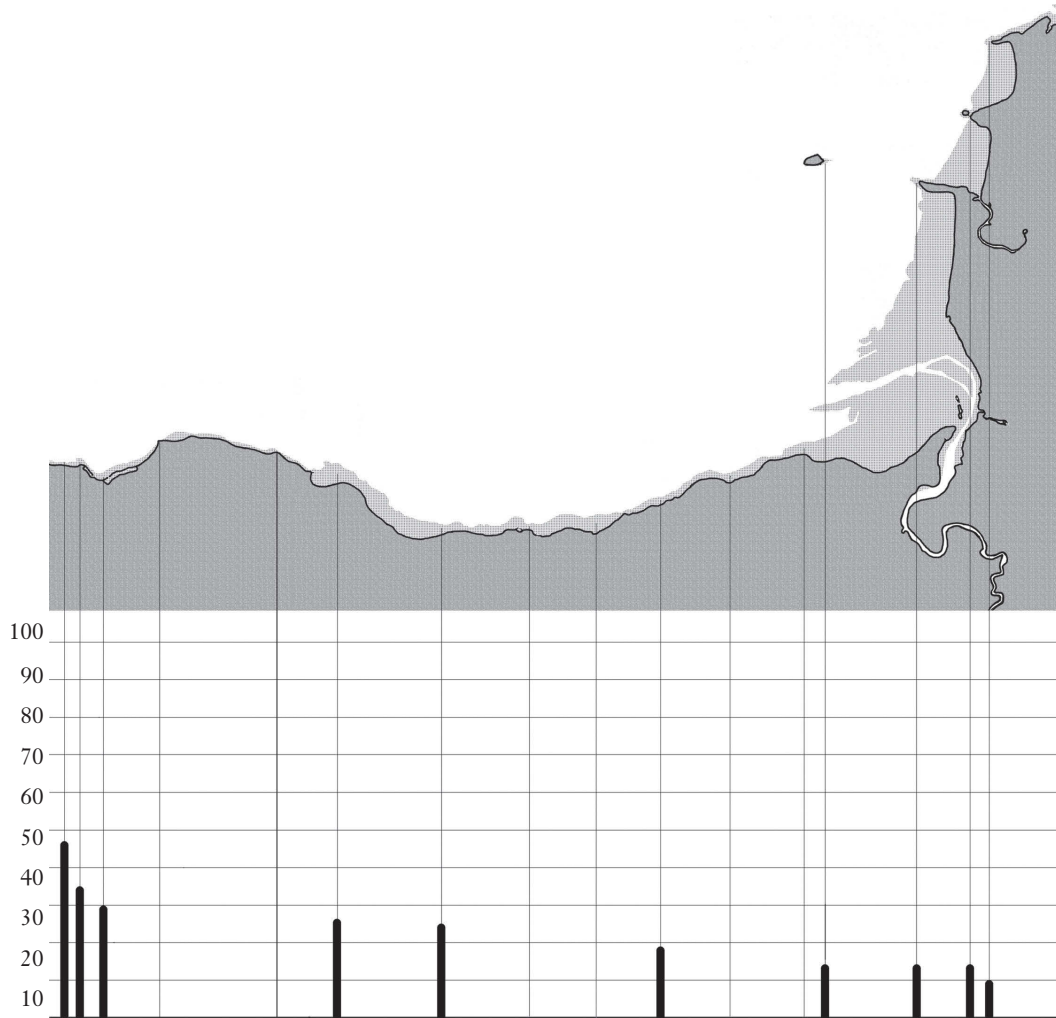


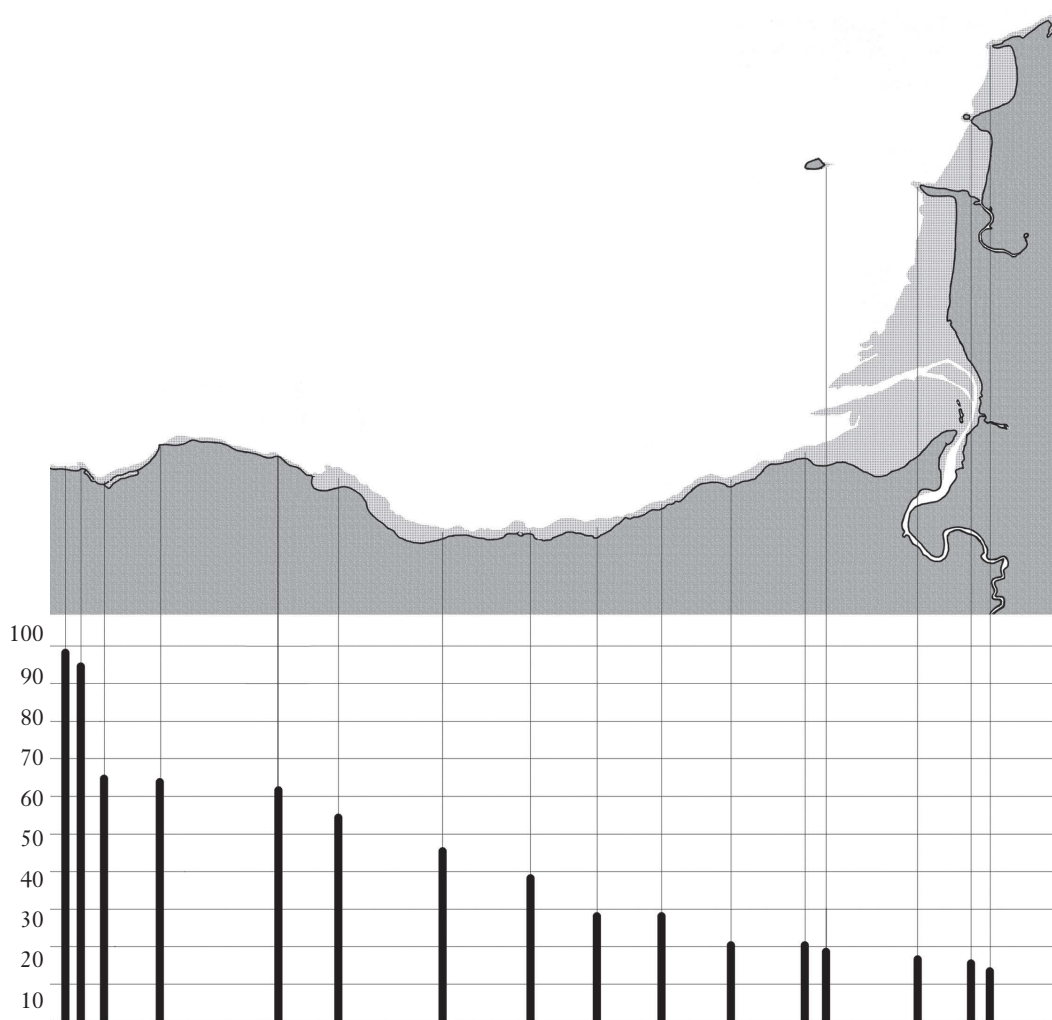
Fig. 2. Mollusc species richness along the Somerset Coast. The assumed fauna based on Ronald Bassindale's wartime surveys

piddocks, bivalve molluscs that burrow into soft rock; the rock must be soft enough for the newly-settled piddock spat to be able to start boring but not so soft that it will erode during the life-time of the adult.

That said, on a shore such as Madbrain Sands at Minehead, where much the same assemblage of substrate types occurs at most levels down the shore, the human observer should expect to find the greatest number of species at low water. In the Bristol Channel, it seems that no two tides drop to

exactly the same level. Every lunar month sees two periods of larger amplitude tides (springs) separated by periods of smaller amplitude tides (neaps). A wider range of species is exposed to the human eye at low water springs than at low water neaps. The lowest low tides (and the highest high tides) occur at the equinoxes and the least impressive ones at the solstices.

The distance that the tide actually goes out on the day that our tide tables predict will be the lowest tide of the year depends on the direction of the wind



*Fig. 3. Mollusc species richness along the Somerset Coast.
The assumed fauna based on Boyden et al. (1977)*

and the atmospheric pressure. High pressure and a strong easterly wind result in a tide lower than expected; low pressure and a westerly gale may bring coastal flooding at high tide.

The sporadic occurrence of certain comparatively large and conspicuous species in the fauna list does not suggest rarity or a fluctuating population density but simply reflects the chance of an observer being present at that site on a truly low tide.

At the coldest period during the last Ice Age, the coastline was way to the west, in the vicinity

of Lundy. Historically, then, Somerset shores were colonised by marine life from the west. But it seems that there has been sufficient time for even slow-moving animals to reach the whole of our area; so, for example, dog-whelks and flat winkles (snails that lack a planktonic larval phase in their life cycles) are present on Sand Point. Nevertheless, the richness of the intertidal fauna decreases up the estuary (Figs 2-5). In most cases, species are inhibited by a combination of the decreasing salinity (or increasing fluctuation of that salinity), the increasing sediment load in the

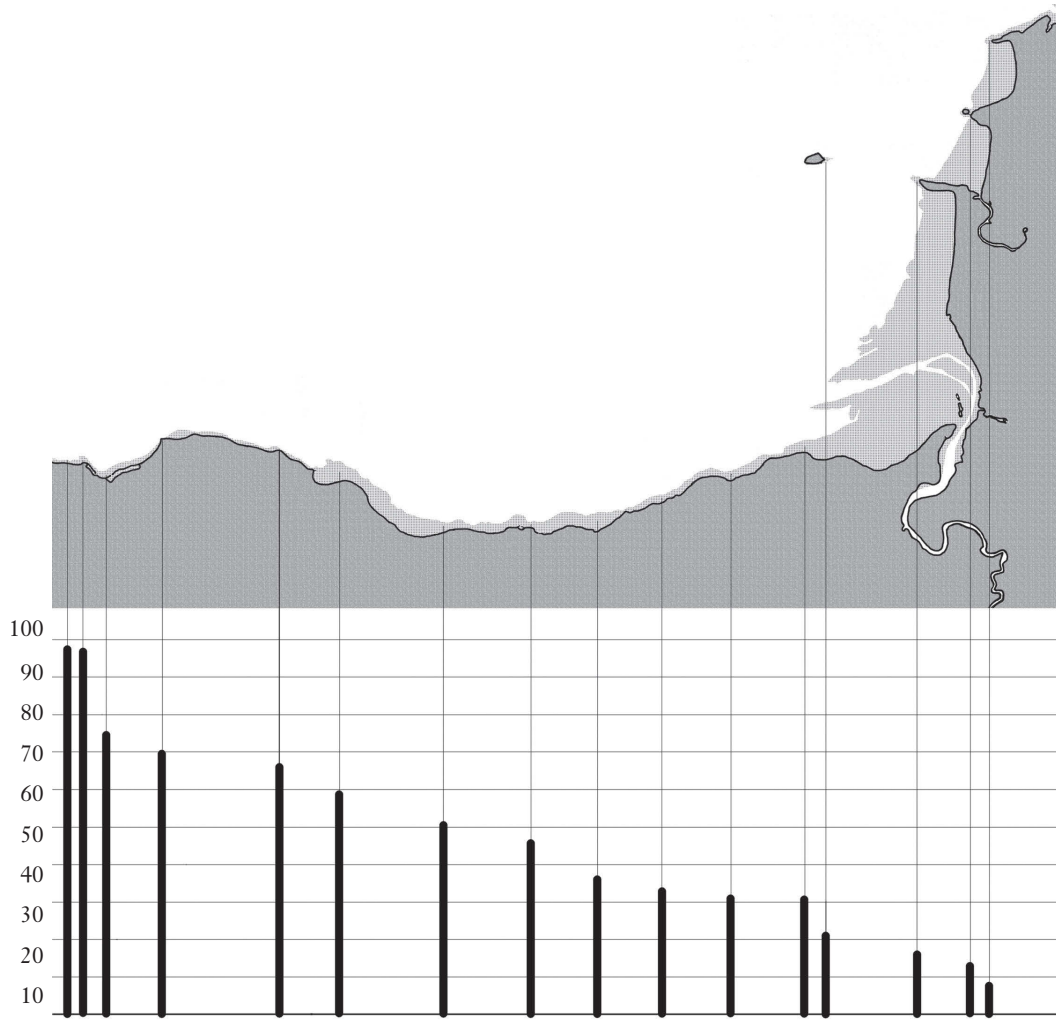


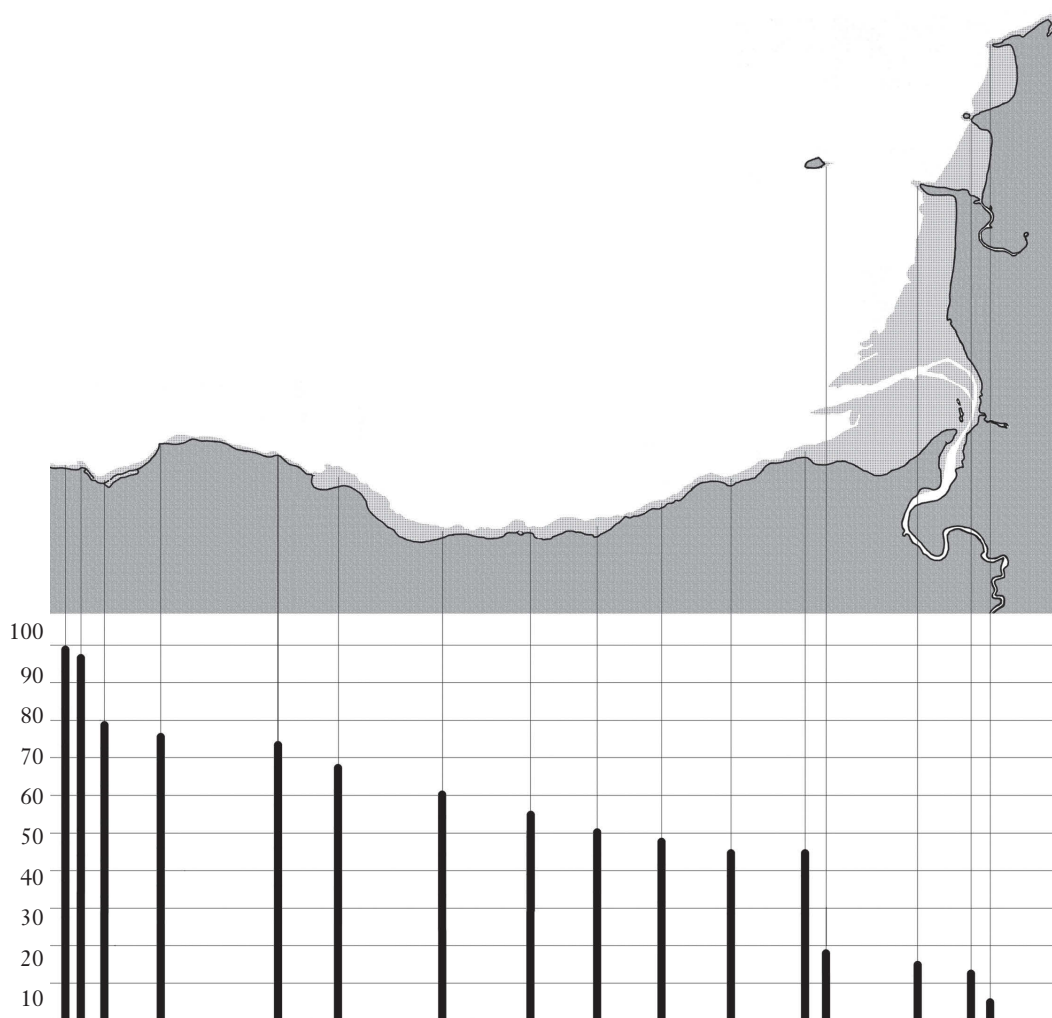
Fig. 4. Mollusc species richness along the Somerset Coast. The assumed fauna based on all the available information

water and the presence of a film of mud over the rock surface.

Being less dense, freshwater floats on seawater, thus the effect of reduced salinity is most marked on the upper shore and least on the lower shore. Many species are found at progressively lower levels on the shore as one moves from west to east along the coast. The subtidal invertebrate fauna off Hinkley Point (the only site in Somerset where it has been studied) contains many species that are intertidal further west (Bremner *et al.* 2011).

But salinity and turbidity are not the only

limiting factors. The Common topshell (*Phorcus lineatus*) reaches its northern limit in south-west Britain. In comparison with most of our intertidal snails, this is a large and conspicuous beastie living on the middle shore with the habit of spending the low tide period in full view. In short, if it is present, it will be seen and recorded, yet Swanton (1912) did not mention it at all. In the 1940s, Bassindale found it only at Porlock. In the autumn of 1974, I found one at Blue Anchor (Crothers 1976), and by 1976 its range had extended east to Watchet (Boyden *et al.* 1977). During the 1990s, the range



*Fig. 5. Species richness of the invertebrate marine fauna along the Somerset Coast.
The assumed fauna based on all the available information.
Data plotted as percentages of the 531 species
(not including insects and arachnids) that comprise the list that follows*

steadily increased to Hinkley Point, where it had become well established by 2003. Cold winters curtail the range. Crisp and Southward (in Crisp 1964) did not visit Somerset shores but wrote that in April/May 1963, following the extremely cold January to March “None observed in north Devon east of Woolacombe though previously common at Ilfracombe and Lynmouth”.

It must be stressed that the information presented in this paper is of the species that have been

recorded; absence of a record is not evidence that the species is absent – it may be common! There are no records of calanoid copepods or mites in the list. Members of both groups are widespread and abundant but were (are) not easily identified to species. Another bias is well illustrated by the records of ostracods. Twenty-eight species are listed; one from Sand Point, eight from Hinkley Point, three from Blue Anchor and twenty-two from Gore Point. Those are not the only places at

which ostracods occur, but they appear to be the only sites to have been visited by anyone able to identify ostracods! A comparable bias will exist with other groups, but to nothing like the same extent (although harpacticoid copepods are not confined to Hinkley Point). For this reason, I have chosen to illustrate the overall distribution pattern along the Somerset coast with the data available for molluscs (Figs 2-4) because many people are able to identify most of those species in the field.

Comparing Fig. 3 with Fig. 2, it is notable that Boyden *et al.* (1977) appear to have recorded twice as many species of mollusc at Porlock (First Rocks) than did Bassindale, but the difference is less marked at Sand Point. On a shore as rich as First Rocks, it is not possible to collect more than a small portion of the total fauna on any one day, so the more visits that are made to the site, the more species are recorded. On Sand Point, however, it is possible to find most of the species present on every (very low tide) visit.

As I have already mentioned, far more visits have been made to the shore at Watchet than to anywhere else east of Porlock Bay. If I had plotted the actual number of records for each site, the Watchet bar would have been longer than Minehead's. Accordingly, I have followed Bassindale's (1943) 'assumed fauna' approach where he assumed that a marine species would be probably present at all sites west of its eastern-most recorded position that offer its preferred microhabitat. There is some evidence in the list that follows that this is indeed so.

Comparing Fig. 4 with Fig. 3, the main difference is the increased number of records from Hinkley Point, thanks to the detailed surveys that have been carried out there in recent years.

On the subject of the molluscan data, some may query my omission of many records included by Swanton (1912). It seems to me that his marine records are of shells, rather than of living molluscs; for one thing, there are no sea slugs! And specimens from geological sites are treated equally with recent material. Many sub-fossil shells from the last interglacial (when sea levels were higher than at present) appear to be of modern species. That said, his records suggest that marine species reached much further up the estuary a hundred years ago than they do now – which may have been true as various drainage works in the ensuing years have hastened the run-off of flood water into the sea.

Data for the other phyla show similar patterns to the molluscs with some, echinoderms and bryozoans in particular, showing an even stronger western bias. Arthropoda is the only phylum for which more than half of the species recorded on Gore Point have also been recorded east of Watchet.

The influence of those Hinkley surveys is even more obvious in Fig. 5 which treats all the data in the list that follows in the same way. But Hinkley Point may indeed be the eastern limit for a significant number of rocky shore species as the next rocky sites are Steephholm and Brean Down, more exposed and ten kilometres away.

The data were plotted on Fig. 5 as percentages, and these confirm that the shores west of Gore Point are indeed the richest in the county. Little over half of the species found there extend east to Watchet and less than a quarter of them have been found, so far, east of Hinkley Point.

Classification

At the time of Linnaeus, generally accepted to have been the 'Father of Taxonomy', few in western Europe doubted that God had created life on Earth and that species had continued unchanged to the present day (despite people being proud of their ability to 'improve' strains of domesticated livestock). This mindset assumed that there was a pre-arranged logical framework within which all species on Earth could be identified, named and classified. The challenge faced by taxonomists was the identification of that framework – and nobody appears to have doubted that a 'correct' classification was possible.

Since Darwin, it has become obvious that the goalposts are moving; all species are evolving but at different rates. Is it any longer possible to imagine a fixed stable classification of the animal kingdom?

Whilst accepting that it is difficult (at this interim stage) to be certain about anything, realising that it takes time to adapt a taxonomy based on morphological characters to one based on DNA, and that any system of classification is best regarded as an hypothesis, I had to adopt some coherent system of nomenclature and have followed WoRMS – the World Register of Marine Species (see www.marinespecies.org).

Arrangement of the Fauna list

I have assumed the 'Five Kingdoms' concept of life on Earth (Margulis and Schwartz 1998) and this list is only concerned with invertebrate phyla of the Kingdom Animalia. Thus no mention is made of those unicellular organisms that were once called Phylum Protozoa.

The invertebrate phyla are arranged in approximate order of complexity (as in Crothers 1997), beginning with the simplest. Within each phylum, the orders are arranged in their traditional sequence (originally thought to represent a 'natural' sequence). The same applies within each order and family, but within each genus species are listed in

alphabetical order. If no member of a taxon (i.e. class, order, family, genus, species, etc.) has been recorded, living, in Somerset, no mention of that taxon is made in the list.

Historical records (from before the 1960s) are listed first followed by more recent notes. In both cases, the sites at which a species has been recorded are listed in order from west to east. At any one site, they are then listed in chronological order. Unreferenced records before 1978 were made (or verified) by Boyden, Little, Mettam or myself; unreferenced records after that date were all made (or verified) by me.

THE FAUNA LIST

PHYLUM PORIFERA Grant, 1836

Sponges

Class CALCAREA Bowerbank, 1862

Order CLATHRINIDA Hartman, 1958

Family CLATHRINIDAE, Minchin, 1900

Clathrina coriacea (Montagu, 1818)

Present as very small clusters of fine anastomosing tubes under boulders on the lower shore at Porlock (Gore Point). Rare, 29.8.73 (Boyden *et al.* 1977) [as *Leucosolenia*].

Order LEUCOSOLENIDA Hartman, 1958

Family GRANTIIDAE Dendy, 1893

Grantia compressa (Fabricius, 1780)

At low water mark at Porlock (Gore Point), 9.2.74, and found there sporadically in subsequent years. Blue Anchor, 3.5.73.

Family SYCETTIDAE Dendy, 1893

Sycon ciliatum (Fabricius, 1780)

Under boulders on the lower shore at Gore Point, 9.2.74; in Porlock Bay, 8.10.83; in Greenaleigh Bay, 8.2.74 and at Blue Anchor, 22.8.73.

Class HOMOSCLEROMORPHA Bergquist, 1978

Order HOMOSCLEROPHORIDA Dendy, 1905

Family OSCARELLIDAE Lendenfeld, 1887

Oscarella lobularis (Schmidt, 1862)

Probably this species encrusting on the lower shore at Porlock and Minehead (Boyden *et al.* 1977).

Class DEMOSPONGIAE Sollas, 1885

Order HADROMERIDA Topsent, 1894

Family CLIONAIDAE, d'Orbigny, 1851

Cliona celata (Grant, 1826)

Boring into shells at low water mark, from Porlock and Greenaleigh Bays.

Family SUBERITIDAE Schmidt, 1870

Suberites carnosus (Johnston, 1842)

Young specimen on a whelk shell inhabited by a hermit crab, Minehead, 29.8.73.

Order HALICHONDRIDA Gray, 1867

Family HALICHONDRIIDAE Gray, 1867

Halichondria bowerbanki (Burton, 1930) and***H. panicea*** (Pallas, 1766) – Breadcrumb sponge

Bassindale (1943c) found them very abundant near a sewer outfall in Porlock Bay but did not record it elsewhere. More recently, common on the lower shore from Porlock to Kilve with isolated clumps as far upstream as Sand Point. Most conspicuous on the tops of boulders in Greenaleigh Bay at extreme low water mark.

Hymeniacion perleve (Montagu, 1818)

Bassindale (1943c) recorded small colonies on the lower shore at Porlock, First Rocks.

Family DYSIDEIDAE Gray, 1867

Dysidea fragilis (Montagu, 1818)

Recorded on several occasions under lower shore boulders at Porlock.

Order HAPLOSCLERIDA Topsent, 1928
 Family CHALINIDAE Gray, 1867
Haliclona oculata (Pallas, 1766)
 Bassindale (1943c) noted a single colony at Porlock, First Rocks. More recently found in Greenaleigh Bay, 9.9.83 and at Minehead, 29.8.73.
Haliclona Grant, 1836, sp.
 Common from Porlock to Blue Anchor.

Order POECILOSCLERIDA Topsent, 1928
 Family RASPAILIIDAE Nardo, 1833
Raspailia hispida (Montagu, 1818)
 A small colony at Porlock, First Rocks (Bassindale, 1943c).

PHYLUM CNIDARIA Verrill, 1865
Class SCYPHOZOA Götte, 1887
 Order SEMAEOSTOMEAE L. Agassiz, 1862
 Family PELAGIIDAE Gegenbaur, 1856
Chrysaora hysoscella (Linnaeus, 1767)
 Individuals are very occasionally stranded east to Minehead, most often seen in summer. Several at Minehead, Culver Cliff, 26.7.01

Family CYANEIDAE L. Agassiz, 1862
Cyanea lamarckii Péron and Lesueur, 1810
 A small blue *Cyanea* in a rock pool at Hurlstone Point, 2.7.87.

Family ULMARIDAE Haeckel, 1880
Aurelia aurita (Linnaeus, 1758) – Moon jellyfish
 In early July 1984, beaches between Woolacombe and Watermouth Cove were littered with thousands of stranded *Aurelia*, yet none was seen as far east as Porlock. Several stranded jellyfish at Minehead, Culver Cliff, 26.7.01 (and many more at Porlock Weir, illustrated by Phillips (2011, p. 32)), and several very damaged jellyfish caught in the strainers at Hinkley Point, Jun. 1984, may have been of this species.

Order RHIZOSTOMEAE
 Family RHIZOSTOMATIDAE Cuvier, 1799
Rhizostoma pulmo (Macri, 1778)
 Single individuals seen at Porlock (stranded), 25.4.68 and 3.6.94, on Bossington Beach (stranded), 21.3.80, and on the east side of Hurlstone Point (a large one swimming strongly), 19.7.84. Several young ones seen in rockpools on the west side of Hurlstone Point on the same day. At least fifty stranded at Minehead, 12.2.68. [*Rhizostoma octopus* in Boyden *et al.* (1977).]

Class HYDROZOA Owen, 1843
 Order LEPTOTHECATA Cornelius, 1992
 Family CAMPANULINIDAE Hincks, 1868
Campanulina pumila (Clark, 1875)
 In *Corallina* cryptofaunal patch on the shore at Hinkley Point (Bremner *et al.* 2011).
Gonothyraea loveni (Allman, 1859)
 In *Corallina* cryptofaunal patch on the shore at Hinkley Point (Bremner *et al.* 2011).

Family HALECIDAE Hincks, 1868
Halecium halecinum (Linnaeus, 1758)
 Small colonies at low water springs, Kilve, 21.5.39 (Bassindale 1941).

Family SERTULARIIDAE Lamouroux, 1812
Dynamena pumila (Linnaeus, 1758)
 Rare at Kilve (Bassindale 1941). Recorded more recently at Blue Anchor, Watchet, Hinkley Point and Brean Down. Often quite common at Watchet in drainage channels on the upper shore.

Hydrallmania falcata (Linnaeus, 1758)
 There are no records of this species growing on the shore, but Bassindale (1941) found stranded specimens all over the estuary.

Sertularella fusiformis (Hincks, 1861)
 A single record from Minehead, 20.8.73. [This species is referred to *S. 'gaudichaudi'* Lamouroux, 1824, in Cornelius (1995) part 2, p. 70.]

Sertularella polyzonias (Linnaeus, 1758)
 Probably this species, recorded in the 1970s, attached to rock and stones at Hurlstone Point, Minehead and Blue Anchor.

Sertularia cupressina (Linnaeus, 1758)
 Bassindale (1941) found it common from Kilve to Aust although absent from Blue Anchor and Weston. More recently it has been generally present throughout the area from Porlock to Sand Point, including a few young colonies on Steepholm, 12.8.95.

Family KIRCHENPAUERIIDAE Stechow, 1921
Kirchenpaueria halecioides (Alder, 1859)
 Porlock, 30.8.73 [as *Ventromma halecioides* in Boyden *et al.* (1977)].

Kirchenpaueria pinnata (Linnaeus, 1758)
 On *Fucus serratus* at Porlock, 30.8.73, and at Minehead, 28.8.73.

Family PLUMULARIIDAE L. Agassiz, 1862
Plumularia setacea (Linnaeus, 1758)
 Probably this species from Porlock, 30.8.73.

- Family CAMPANULARIIDAE Johnston, 1836
Clytia hemisphaerica (Linnaeus, 1767)
 Bassindale (1941) [as *C. johnstoni*] found it on *Tubularia* from Kilve and Weston. Recorded more recently on *Tubularia* at Blue Anchor and on *Corallina* at Brean Down.
- Hartlaubella gelatinosa*** (Pallas, 1766)
 Abundant in a pool at St Audries Bay [Sanford (1860), as *Laomedea*]. Recorded on rocks and stones amongst mud at Blue Anchor (common, 23.4.40), Stolford and Weston (abundant on Birnbeck Island, 19.4.39) (Bassindale 1941) [as *Laomedea*].
- Laomedea flexuosa*** Alder, 1857
 Recorded in 1973 from Blue Anchor, Watchet, and Brean Down (Boyden *et al.* 2011). In the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Obelia bidentata*** Clark, 1875
 Listed from the *Corallina* cryptofaunal patch on Hinkley Point by Bremner *et al.* (2011).
- Obelia dichotoma*** (Linnaeus, 1758)
 Recorded at Blue Anchor, 27.6.68, 3.5.73; Watchet (Helwell Bay), 14.8.97. Listed from the *Corallina* cryptofaunal patch on Hinkley Point by Bremner *et al.* (2011).
- Order ANTHOATHECATA Cornelius, 1992
 Family TUBULARIIDAE Goldfuss, 1818
Tubularia indivisa Linnaeus, 1758
 Bassindale (1941, 1943c) found it common from Blue Anchor to Weston, where locally abundant, but he did not note it from Porlock. Earlier records are from Weston (Matthews 1924). More recently, this species was generally distributed at extreme low water from Hurlstone Point to Weston wherever there is rock at this level, and locally abundant on Black Rock (St Audries). All intertidal colonies at Watchet (Helwell Bay) appeared dead in the hot weather on 11.8.95. Large quantities of detached colonies are caught in the strainers at Hinkley Point – although not seen on the shore there, 8.9.87, on a 0.6 m tide. It is apparently absent from Porlock Weir and Steephelm, and rare at Sand Point.
- Ectopleura larynx*** (Ellis and Solander, 1786)
 Blue Anchor, locally common, with many *Tubularia indivisa*, at extreme low water, 31.8.73 (Boyden *et al.* 1977) [as *Tubularia larynx*], and 9.9.87. Not seen at Watchet but small colonies were frequent, on and amongst abundant *T. indivisa* at Black Rock (St Audries), 16.10.85.
- Family OCEANIIDAE Eschscholtz, 1829
Turritopsis polycirra (Keferstein, 1862)
 Common on empty *Pholas* shells in the rock at Blue Anchor. [Bassindale (1941), as *Turris neglecta*]
- Family PANDEIDAE Haeckel, 1879
Leuckartiara octona (Fleming, 1823)
 In the *Corallina* cryptofaunal community on Hinkley Point (Bremner *et al.* 2011). This record requires confirmation as Schuchert (2012) states that the polyp can only be identified from the medusa that it eventually releases.
- Family HYDRACTINIIDAE L. Agassiz, 1862
Clava multicornis (Forsskål, 1775)
 Bassindale (1941) found it common at Blue Anchor, 23.4.40. The absence of later records of this distinctive species, seemingly well suited to this habitat (see Schuchert 2012), is surprising.
- Class ANTHOZOA** Ehrenberg, 1834
 Sub-Class OCTOCORALLIA Haeckel, 1866
 Order ALCYONACEA Lamouroux, 1816
 Soft Corals
 Family ALCYONIDAE Lamouroux, 1812
Alcyonium digitatum Linnaeus 1758, Dead man's fingers
 Very small colonies at Blue Anchor, 3.5.73.
- Family CLAVULARIIDAE Hickson, 1894
Sarcodictyon roseum (Philippi, 1842)
 Present at extreme low water at Watchet, 1984, but much commoner amongst the bases of *Tubularia indivisa* colonies on Black Rock (St Audries), 16.10.85.
- Sub-Class HEXACORALLIA Haeckel, 1866
 Order ACTINIARIA R. Hertwig, 1882
 Sea anemones
 Family EDWARDSIIDAE Andres, 1881
Edwardsiella carnea (Gosse, 1856)
 In piddock holes at Kilve, 20.12.72, about 10 mm in diameter (Boyden *et al.* 1977) [as *Fagesia carnea*].
- Family ACTINIIDAE Goldfuss, 1820
Actinia equina (Linnaeus, 1758) – Beadlet anemone
 Most of the published records may refer to either this or the next species. Bassindale (1941, 1943c) found it common at Porlock, fairly common at Blue Anchor, present at Kilve and near the Old Pier at Weston, though not on Birnbeck

Island. Yonge and Lloyd (1939) recorded it from Steephholm. More recently, this anemone was widespread and abundant on western shores, extending up the channel to Sand Point. A specimen at Doniford was illustrated by Phillips (2011, p.30). It is particularly abundant in the outfall river below the power station at Hinkley Point, showing a wide range of colours between green and red. On Brean Down and at Weston, numbers seem to vary greatly from year to year.

Actinia fragacea Tugwell, 1856 – Strawberry anemone

Formerly confused with *A. equina*. The only positive records are from Porlock, Gore Point and Hurlstone Point. A large specimen on the lower shore at Hurlstone, 20.2.88.

Anemonia viridis (Forsskål, 1775) – Snakelocks anemone

First recorded on Gore Point (Porlock) 25.1.73; a small group living in the gravel below the fish-weir (Boyden *et al.* 1977) [as *A. sulcata*]. The same group (?) was seen again 16.8.74, in autumn 1983, 9.2.85 and 3.11.86. Other small groups were seen in upper-shore pools, east of the stream, 7.7.86, 31.5.94 and in the autumn of 1996. The species was much more widespread in 2002, but still not recorded at any other site.

Urticina eques (Gosse, 1860)

Formerly confused with *U. felina*. Widely distributed at extreme low water from Blue Anchor to Hinkley Point (where they are occasionally taken in the strainers). The white anemones mentioned by Bassindale (1941, p.155) at Blue Anchor and Kilve were probably of this species.

Urticina felina (Linnaeus 1761) – Dahlia anemone

Records made before 1981 may have included *U. eques*. Bassindale (1941, 1943c) [as *Tealia*] found it common from Blue Anchor to Weston but did not note it from Porlock. More recently, this species was common and very widely distributed along the lower shore from Porlock to Sand Point (even on Hurlstone Point) wherever there was a hard substrate, although most abundant at Porlock. Rare on Steephholm (Yonge and Lloyd 1939) [as *Tealia*].

Anthopleura thallia (Gosse, 1854) – Glaucous pimplet

Occasional in crevices at Hinkley Point, 27.9.76. The specimen collected had the prominent verruci typical of the species on but one side of the column, with small lumps in their place on the other.

Family DIADUMENIDAE Stephenson, 1920

Diadumene cincta Stephenson, 1925 – Orange anemone

Small clusters under rock overhangs and on *Tubularia* tubes at extreme low water mark from Blue Anchor to Hinkley Point. Particularly common on Black Rock (St Audries) 16.10.85 (with *Metridium senile*), and on the west side of Hinkley Point, 27.9.76.

Family METRIDIIDAE Carlgren, 1893

Metridium senile (Linnaeus, 1761) – Plumose anemone

Abundant under overhangs at Black Rock (St Audries), 16.10.85 – separate colonies of white and orange individuals. Expanded anemones appear intermediate between vars *dianthus* and *pallidus*. Generally distributed on stones in the effluent river at Hinkley Point, 8.9.87.

Family SAGARTIIDAE Gosse, 1858

Sagartia elegans (Dalyell, 1848) – Elegant anemone

Var. *miniata* common at extreme low water, Blue Anchor, 19.2.84, 9.9.87. Probably this species very abundant in the outflow river at Hinkley Point, 8.9.87.

Sagartia ornata (Holdsworth, 1855)

Bassindale (1941) found several at Blue Anchor whilst Yonge and Lloyd (1939) found three in a high-level pool on Steephholm [both records as *S. troglodytes* var. *ornata*].

Sagartia troglodytes (Price, in Johnston, 1847)

Bassindale (1943c) found two at Porlock, Gore Point. More recently, found occasionally on Porlock (Gore Point) – e.g. 3.11.86 – and was generally distributed at extreme low water mark from Minehead to Watchet. Steephholm. Present at Stolford (Phillips 2014).

PHYLUM CTENOPHORA Eschscholtz, 1829

Comb jellies

Class TENTACULATA Eschscholtz, 1825

Order CYDIPPIDA Gegenbauer, 1856

Family PLEUROBRACHIIDAE Chun, 1880

Pleurobrachia pileus (O. F. Müller, 1776)

A common member of the zooplankton (regularly taken in Watchet Harbour plankton trawls), this species is sometimes stranded on the beaches in large numbers.

Order LOBATA Eschscholtz, 1825

Family BOLINOPSIDAE Bigelow, 1912

Bolinopsis infundibulum (O. F. Müller, 1776)

Juveniles taken in Watchet Harbour plankton trawls, 28.9.84. Presumably these too will be sometimes stranded in rock pools.

Class NUDA Chun, 1879

Order BEROIDA Eschscholtz, 1825

Family BEROIDAE Eschscholtz, 1825

Beroe cucumis Fabricius, 1780

Much scarcer than *Pleurobrachia pileus* and adults have not yet been taken by plankton hauls in Watchet Harbour (a few juveniles, 28.9.84). Occasionally, individuals have been found stranded on the shore as far east as Minehead. Several, about 10 mm long, in rock pools at Hurlstone Point, 19.7.84.

PHYLUM PLATYHELMINTHES**Class RHABDITOPHORA** Ehlers, 1985

Flatworms

Order PROLECITHOPHORA Karling, 1940

Family PLAGIOSTOMIDAE

Plagiostomum vittatum (Frey and Leuckart, 1847)

Listed amongst the *Corallina* cryptofaunal community on Hinkley Point by Bremner *et al.* (2011).

Order SERIATA Bresslau, 1928-33

Sub-Order TRICLADIDA Lang, 1884

Family PROCERODIDAE Diesing, 1862

Procerodes littoralis (Ström, 1768)

Usually common in the freshwater stream, where it flows across the shore west of Gore Point (Porlock), and always abundant in the stream at Kilve Pill. Apparently no change from Bassindale (1941, 1943c) [as *P. ulvae*] to the present day.

Order POLYCLADIDA Lang, 1884

Family LEPTOPLANIDAE Stimpson, 1857

Leptoplana tremellaris (O. F. Müller, 1773)

Bassindale (1941) found a few under stones at Blue Anchor. One found in the lab after general collecting at Porlock, Gore Point, 1.3.87. Another from the mussel bed area, 10.7.87. It is probably this species which is now sometimes common at Porlock and regularly found east to Brean Down.

Family STYLOCHOPLANIDAE Faubel, 1983

Stylochoplana agilis Lang, 1884

Single individuals collected from Porlock (Gore Point), 17.2.84, and Greenaleigh Bay, 9.9.83.

PHYLUM NEMERTEA**Class PALAEONEMERTEA**

Family TUBULANIDAE Renier, 1804

Tubulanus annulatus (Montagu, 1804)

One from Porlock Bay, 14.10.74.

Class ANOPLA Schultz, 1851

Sub-Class HETERONEMERTEA

Family LINEIDAE

Lineus longissimus (Gunnerus, 1770)

Occasional at Porlock, one from Gore Point, 9.2.74; another, about 3 m long, in the Bay at low water springs, below the submerged forest, 2.3.95.

Lineus ruber (Müller, 1774) and***Lineus viridis*** (Müller, 1774)

It is not possible to separate records (sometimes also under the name *L. gesserensis* McIntosh) of these two species made before the publication of Gibson (1982). Green and rose-coloured specimens were recorded as rare by Bassindale (1941) from Blue Anchor to Weston. He did not find it (them?) at Porlock. More recently, the species were widespread and probably common. Both colour varieties occur at Porlock and Watchet. Recorded on the foreshore at Hinkley Point by Bamber and Coughlan (1987).

Lineus viridis (Müller, 1774)

The *Lineus* collected from Gore Point (Porlock), 8.9.83, fitted descriptions of this species.

Class ENOPLA Schultze, 1851

Order MONOSTILIFERA Brinkmann, 1917

Family AMPHIPORIDAE

Amphiporus dissimulans Riches, 1893

Porlock (Gore Point), a single individual collected on the lower shore, 8.2.89.

Amphiporus lactifloreus (Johnston, 1828)

Two were collected at Porlock, 13.10.73, a very active individual at Watchet, 8.7.86, and the species is probably common under boulders at Kilve. Steepholm: one in a low-shore rock pool by Calf Rock, 12.8.95.

Family EMPLECTONEMATIDAE

Emplectonema neesii (Oersted, 1843)

Single records from Porlock (Gore Point) 15.9.73, 18.2.84, 4.11.86 (three individuals) and in the Bay 14.10.74; one from Minehead (Madbrain Sands), 22.5.75.

Family OERSTEDIIDAE

Oerstedtia dorsalis (Abildgaard, 1806)

Recorded from algae collected at Hurlstone Point, 4.11.86, Greenaleigh Bay, 20.3.73, and Brean Down, 14.8.70.

Family TETRASTEMMATIDAE

Tetrastemma candidum (Müller, 1774)

One specimen from red algae collected at Porlock (First Rocks), 18.2.84.

Tetrastemma melanocephalum (Johnston, 1837)

One from soft mud on Steart Flats, 11.8.72.

Tetrastemma Ehrenberg, 1831, sp.

Steepholm: one at South Landing, 2.6.73, and two more from soft mud below mean tide level, 1.7.73.

Prostomatella Friedrich, 1935 sp.

In clean sand at Minehead and Weston, with densities up to 50 per square metre. Limited to a narrow zone around mean high water of neap tides at Weston but extending over the whole middle shore at Minehead (Little and Boyden 1976).

PHYLUM ANNELIDA Lamarck, 1809

Class POLYCHAETA Grube, 1850

Sub-Class POLYCHAETA INCERTAE SEDIS

Family DINOPHILIDAE Remane, 1925

Dinophilus taeniatus Harmer, 1889

Recorded from *Corallina* cryptofaunal patch on Hinkley Point by Bremner *et al.* (2011).

Dinophilus Schmidt, 1848, sp.

Recorded from high shore pools at Kilve by Bassindale (1941) and, more recently, amongst weeds at Porlock, in *Bicellariella* tufts at Minehead and in mud at low water at Kilve.

Family NERILLIDAE Levinsen, 1883

Nerilla antennata Schmidt, 1848

One on a *Tubularia* colony collected from Blue Anchor, 27.8.76.

Family PROTODRILOIDIDAE Purschke and Jouin, 1988

Protodriloides chaetifer (Remane, 1926)

Hinkley Point, taken in core samples from the intertidal flats (Bremner *et al.* 2011).

Family PSAMMODRILIDAE Swedmark, 1952

Psammodrilus balanoglossoides Swedmark, 1952

Hinkley Point: taken in core samples from the intertidal flats. (Bremner *et al.* 2011).

Sub-Class ERRANTIA Audouin and H. Milne Edwards, 1832

Order PHYLLODOCIDA Dales, 1962

Sub-Order APHRODITIFORMIA Levinson, 1883

Scale worms

Family PHOLOIDAE Kinberg, 1858

Pholoe baltica Örsted, 1843

Taken in a 'day grab' from Hinkley Point intertidal flats (Bremner *et al.* 2011).

Family POLYNOIDAE Malmgren, 1867

Lepidonotus clava (Montagu, 1808)

One record from Greenaleigh Point, 8.2.74.

Lepidonotus squamatus (Linnaeus, 1758)

Occasional at Porlock and between Blue Anchor and Weston (Bassindale 1941, 1943c). More recently, common between Porlock and Kilve, under boulders on the lower shore.

Harmothoe extenuata (Grube, 1840)

Common at Porlock; the commonest scale worm in Greenaleigh Bay; present at Blue Anchor and east to Kilve (Boyden *et al.* 1977).

Harmothoe imbricata (Linnaeus, 1767)

There has been some confusion between this species and the next. Bassindale (1941) listed *H. imbricata* as common under stones from Blue Anchor to Weston, but he was unable to distinguish some specimens that bore characters of both species. All specimens critically examined by Boyden *et al.* (1977) were attributable to *H. impar* on the position of the eyes – see Pettibone (1953).

Harmothoe impar Johnston, 1839

It is probably this species, and not *H. imbricata*, that Bassindale (1943c) found common and widespread at Porlock; it is currently common there, extending east to Kilve and Hinkley Point (Bamber and Coughlan 1987). Several individuals, probably of this species, on Steepholm spit, 12.8.95.

Malmgreniella marphysae (McIntosh, 1876)

Recorded in a core sample from intertidal flats at Hinkley Point (Bremner *et al.* 2011) [as *Malmgrenia*].

Polynoe scolopendrina Savigny, 1822

Bassindale (1943c) found one at Porlock (Gore Point).

Family SIGALIONIDAE Malmgren, 1867

Sthenelais boa (Johnston, 1833)

Bassindale (1943c) found two at Porlock (Gore Point). Three subsequent records from there,

- 11.7.68, 18.2.84, 1.3.87; and once from Kilve, 7.2.74.
- Sub-Order PHYLLODOCIFORMIA Levinson, 1883
Paddleworms
- Family PHYLLODOCIDAE Örsted, 1843
- Eteone flava** (Fabricius, 1780)
Little and Boyden (1976) found it at Minehead – a few in the sand, 5.7.73, but common 10.3.74.
- Eteone longa** (Fabricius, 1780)
Minehead, found there in sand, 5.7.73: common, Feb. 1975 (Little and Boyden 1976). At a density of 4 per square metre in sand by the intake construction area at Hinkley Point, 1984-1986 (Bamber and Coughlan 1987). Taken in core samples on Hinkley Point flats (Bremner *et al.* 2011).
- Eulalia viridis** (Linnaeus, 1767)
Regularly seen amongst barnacles on Hurlstone Point, before the rock dries out.
- Phyllococe lamelligera** Johnston, 1865
Three collected from Watchet (Helwell Bay), 3.3.73, one of which subsequently laid a green egg mass in the laboratory.
- Phyllococe laminosa** Savigny in Lamarck, 1818
Regularly found at Porlock (Gore Point) and in Greenaleigh Bay.
- Phyllococe maculata** (Linnaeus, 1767)
Occasional under rocks on sand at Minehead, and one found at Kilve, 24.2.74 (Boyden *et al.* 1977) [as *Anaitides*].
- Phyllococe mucosa** Örsted, 1843
Taken by core sampling in the intertidal flats off Hinkley Point (Bremner *et al.* 2011) [as *Anaitides*].
- Pirakia punctifera** (Grube, 1860)
One at Porlock (Gore Point) (Bassindale 1943c) [as *Eulalia*].
- Family HESIONIDAE Grube, 1850
- Kefersteinia cirrata** (Keferstein, 1862)
One recorded by Bassindale (1941) at Blue Anchor and another from Porlock, 9.2.74.
- Family SYLLIDAE Grube, 1850
- Exogone naidina** Örsted, 1845
Listed from *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Odontosyllis ctenostoma** Claparède, 1868
One collected at Porlock, Gore Point, 9.2.74.
- Sphaerosyllis taylori** Perkins, 1981
Hinkley Point, taken in core samples from the intertidal flats (Bremner *et al.* 2011).
- Syllis armillaris** (O. F. Müller, 1776)
One from Minehead, Feb. 1971, and two ripe females in a middle-shore crevice at Kilve in Apr. 1974 (Boyden *et al.* 1977) [as *Typosyllis*].
- Syllis gracilis** Grube, 1840
In the *Sabellaria* reef at Hinkley Point (Bamber and Coughlan 1987); and in the *Corallina* cryptofaunal patch (Bremner *et al.* 2011).
- Syllis prolifera** Krohn, 1852
Porlock (Gore Point): in mucous tubes at low water springs, common 17.2.84, and amongst algae at Hurlstone Point.
- Family NEREIDIDAE Blainville, 1818
Ragworms
- Alitta virens** (M. Sars, 1835)
Sporadic records from Greenaleigh Bay, Minehead, Weston (Birnbeck Island) (Boyden *et al.* 1977) [as *Neanthes*].
- Hediste diversicolor** (O. F. Müller, 1776)
Bassindale (1941) [as *Nereis*] found one at Blue Anchor, several at Kilve where the stream runs over the beach, and abundant in mud up-Channel to beyond Sand Point. More recently, common in Porlock salt-marsh and in the mud of Minehead and Watchet harbours. At a density of 125 per square metre in sandy mud at Hinkley Point, 1984-1986 (Bamber and Coughlan 1987). With *Macoma balthica* and *Peringia ulvae*, it more or less dominates the large area of littoral sandy mud from Stert Flats to Brean Down; these three species account for 85% of the biomass (Bremner *et al.* 2011). Present in Weston Marine lake and abundant at Sand Point (Boyden *et al.* 1977) [as *Neanthes*].
- Eunereis longissima** Johnston, 1840
Identified from core samples on Hinkley Point intertidal flats (Bremner *et al.* 2011) [as *Nereis*].
- Neanthes irrorata** (Malmgren, 1867)
A single record from Porlock (Gore Point), 12.7.68.
- Nereis pelagica** Linnaeus, 1758
Bassindale (1941, 1943c) found it at Porlock, and common at Blue Anchor, Kilve and Weston. More recently, it was the common nereid from Porlock to Kilve. It is present at Hinkley Point (Bamber and Coughlan 1987; Bremner *et al.* 2011), also Steephholm spit, 12.8.95, and Brean Down.
- Perinereis cultrifera** (Grube, 1840)
One, perhaps doubtful, record from Porlock, 25.4.68, but three together in Greenaleigh Bay, 7.10.83, and single records from Hinkley Point,

27.9.76, 8.9.87. Not recorded by Bremner *et al.* (2011).

Platynereis dumerilii (Audouin and Milne Edwards, 1834)

Occasional, in tubes on *Corallina*, in rock pools, at Weston (Bassindale 1941). One at Porlock, 9.2.74; several young ones in Watchet plankton, 10.6.84; and another individual at Kilve, 24.2.74. Bamber and Coughlan (1987) recorded it from Hinkley Point; occurring in the *Corallina* cryptofaunal community there (Bremner *et al.* 2011).

Family NEPHTYIDAE Grube, 1850

Catworms

Nephtys cirrosa (Ehlers, 1868)

Bassindale (1941) recorded it only from Blue Anchor, where it was common on the middle shore with *Arenicola marina*. More recently, it was quite common in sandy beaches from Greenaleigh Bay to St Audries Bay. Taken in grab catches and core samples from the intertidal flats on Hinkley Point (Bremner *et al.* 2011).

Nephtys hombergii Savigny in Lamarck, 1818

Bassindale (1941) found one at Blue Anchor, and considered it common, with *Arenicola marina* and *Macoma balthica*, at Weston. At densities between 800 and 1620 per square metre in liquid mud and up to 4625 per square metre in sandy mud of the foreshore gullies at Hinkley Point, 1984-1986 (Bamber and Coughlan 1987). With *Macoma balthica*, it dominates the infralittoral sandy mud of Stert and Berrow Flats (Bamber *et al.* 2011; Bremner *et al.* 2011). Boyden *et al.* (1977) found it common upstream from Stolford and, exceptionally, west to Minehead. This is the *Nephtys* which commonly occurs in the lower reaches of estuaries (Haderlie and Clark 1959). It locally replaces *Hediste diversicolor* in the flats west of Weston, occupying a different microhabitat in places where both species co-exist (Boyden and Little 1973).

Nephtys longosetosa Örsted, 1842

Taken in core samples on the intertidal flats at Hinkley Point (Bremner *et al.* 1977).

Family GLYCERIDAE Grube, 1850

Glycera tridactyla Schmarda, 1861

One from Minehead (Madbrain Sands), 10.3.74 (Boyden *et al.* 1977) [as *G. convoluta*].

Family GONIADIDAE Kinberg, 1866

Goniada emerita Audouin and Milne-Edwards, 1833

One from the lower shore at Porlock (First

Rocks), 25.2.71.

Order EUNICIDA

Family EUNICIDAE Berthold, 1827

Lysidice ninetta Audouin and Milne-Edwards, 1833

Porlock, two near Gore Point (Bassindale 1943c).

Marphysa sanguinea (Montagu, 1815)

Bassindale (1941, 1943c) recorded single specimens from Porlock and Blue Anchor. There were two more recent records from the same sites, 20.3.69 and 23.9.76 respectively.

Family LUMBRINERIDAE Schmarda, 1861

Lumbrineris latreilli Audouin and Milne-Edwards, 1834

Bassindale (1941) found a few at Blue Anchor and Kilve. More recently, there were records of single worms in Porlock Bay, 9.2.74, at Blue Anchor, 23.9.76, and Kilve, 7.2.74, whilst several were collected at Minehead, Feb. 1975.

Family OENONIDAE Kinberg, 1865

Arabella iricolor (Montagu, 1804)

Single specimens from Porlock, Gore Point, in 1940 (Bassindale, 1943c), 12.7.68 and 18.2.84.

Order SCOLECIDA Rouse and Fauchald, 1997

Family CAPITELLIDAE Grube, 1862

Capitella capitata (Fabricius, 1780)

Identified from core samples taken on the foreshore at Hinkley Point (Bremner *et al.* 2011).

Mediomastus fragilis Rasmussen, 1973

Hinkley Point: taken in core samples from the intertidal flats (Bremner *et al.* 2011).

Family ORBINIIDAE Hartman, 1942

Scoloplos armiger (Müller, 1776)

Recorded in middle shore sand at Minehead. One from Steephholm spit, 12.8.95, and Weston.

Family PARAONIDAE Cerruti, 1909

Aricidea minuta Southward, 1956

Identified in core samples taken from intertidal flats on Hinkley Point (Bremner *et al.* 2011).

Levinsenia gracilis (Tauber, 1879)

Identified in core samples taken from intertidal flats on Hinkley Point (Bremner *et al.* 2011).

Paraonis fulgens (Levinson, 1884)

Common in sand at Minehead, 5.7.73. The distinctive burrows were still common there, Feb. 1975, but no living worms were found. Identified in core samples taken from intertidal flats on Hinkley Point (Bremner *et al.* 2011).

- Sub-Class SEDENTARIA Lamarck, 1818
Family SPIONIDAE Grube, 1850
- Aonides paucibranchiata** Southern, 1914
Probably this species in the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Boccardia polybranchia** (Haswell, 1885)
Probably this species in *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Dipolydora caulleryi** (Mesnil, 1897)
In the *Sabellaria* reef at Hinkley Point (Bamber and Coughlan 1987) [as *Polydora*]. Listed from the *Corallina* cryptofaunal patch by Bremner *et al.* (2011) [as *Polydora*].
- Dipolydora coeca** (Örsted, 1843)
Watchet: in holdfasts of *Fucus vesiculosus* high on the shore in Helwell Bay, 14.9.73 (Boyden *et al.* 1977) [as *Polydora*]. Spionid larvae in the Watchet plankton, e.g. 10.6.84, correspond to this species.
- Malacoceros fuliginosus** (Claparède, 1870)
At a density of 250 per square metre in sand by the outfall headworks construction area at Hinkley Point, 1984-1986 (Bamber and Coughlan 1987) [as *Scolecopsis fuliginosa*].
- Malacoceros tetracerus** (Schmarda, 1861)
One from Porlock, 10.8.74, but abundant in muddy sand, St Audries Bay, 10.8.72 (Boyden *et al.* 1977) [as *Scolecopsis ciliatus*]. In the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Polydora ciliata** (Johnston, 1838)
Bassindale (1941) found it abundant burrowing in calcareous rocks at Blue Anchor and Kilve. Yonge and Lloyd (1939) recorded it from upper shore pools on Steephelm. It is now generally common in any calcareous rock from Minehead to Weston – and especially at Doniford.
- Polydora cornuta** Bosc, 1802
Hinkley Point, in core samples from the intertidal flats and also from the *Corallina* cryptofaunal patch (Bremner *et al.* 2011).
- Pygospio elegans** Claparède, 1863
Recorded at Weston (Bassindale 1941). More recently, generally abundant in sandy, and sometimes muddy, areas from Minehead to Sand Bay. Present at densities of 720-1,800 per square metre in liquid mud at Hinkley Point, reaching 6,500 per square metre in sand at the outfall headworks, 1986 (Bamber and Coughlan 1987). In core samples from the intertidal flats (Bremner *et al.* 2011).
- Scolecopsis bonnieri** (Mesnil, 1896)
Minehead: one in sand with the amphipod *Haustorius arenarius*, 4.3.73 (Boyden *et al.* 1977) [as *Nerine*].
- Scolecopsis squamata** (Müller, 1806)
Abundant in middle shore sand at Blue Anchor (Bassindale 1941). Three in sand at Minehead, 5.7.73; one in mud at Kilve, 24.2.74; and two in sand at Breaan, 14.8.70 (Boyden *et al.* 1977) [as *Nerine cirratulus* (Delle Chiaje)]. Bamber and Coughlan (1987) list it from Hinkley Point as *N. cirratulus*. Taken in core samples from the intertidal flats at Hinkley Point by Bremner *et al.* (2011).
- Spio filicornis** (Müller, 1776)
Minehead, common, 5.7.73. At a density of 125 per square metre in the sandy mud of foreshore gullies at Hinkley Point, 1984-1986 (Bamber and Coughlan 1987).
- Spio martinensis** Mesnil, 1896
Hinkley Point, taken in core samples from the intertidal flats (Bremner *et al.* 2011).
- Streblospio shrubsolii** (Buchanan, 1890)
Hinkley Point, taken in core samples from the intertidal flats (Bremner *et al.* 2011).
- Family OPHELIIDAE Malmgren, 1867
- Travisia forbesii** Johnston, 1840
Minehead (Madbrain Sands), found in sand at low water, 4.2.73 and 10.3.74.
- Family ARENICOLIDAE Johnston, 1835
Lugworms
- Arenicola marina** (Linnaeus, 1758)
Widespread and generally common, in muddy sand; abundant at Blue Anchor and Weston (Bassindale 1941). Recorded at Stolford by Haderlie and Clark (1959) and at Hinkley Point by Bamber and Coughlan (1987) and Bremner *et al.* (2011). Only one record from Greenaleigh Bay, 9.9.83, but generally abundant in sand (often clean sand) from Minehead to Sand Bay. Small worms are particularly common at the eastern end of Blue Anchor Beach, mid shore.
- Order TERESELLIDA *sensu* Rouse and Fauchald, 1997
- Family AMPHARETIDAE Malmgren, 1866
- Ampharete acutifrons** (Grube, 1860)
Collected by core sampling from the intertidal flats off Hinkley Point (Bremner *et al.* 2011).

Ampharete lindstroemi Malmgren, 1867 sensu Hessle, 1917

Collected by core sampling from the intertidal flats off Hinkley Point (Bremner *et al.* 2011).

Melinna cristata (M. Sars, 1851)

Only one record of living worms, Minehead (Madbrain Sands) 28.2.75, but empty tubes are irregularly found in Greenaleigh Bay.

Family CIRRATULIDAE Carus, 1863

Threadworms

Cirratulus cirratus (O. F. Müller, 1776)

Under stones on the lower shore at Porlock, Gore Point, 12.7.68.

Cirriformia tentaculata (Montagu, 1808)

Probably this species on the middle shore at Blue Anchor, 26.8.76.

Tharyx marioni (de Saint-Joseph, 1894)

Single records from Minehead and Kilve. Common in mud at low water at Weston, especially in summer (Little and Boyden 1976).

Family FLABELLIGERIDAE de Saint-Joseph, 1894

Flabelligera affinis M. Sars, 1829

Porlock (Gore Point). Young specimens crawling about between the spines of a sea urchin, *Psammechinus miliaris*, from First Rocks, 6.10.83.

Pherusa plumosa (O. F. Müller, 1776)

One from Greenaleigh Bay, 8.2.74; occasional at Blue Anchor and Watchet; found in an upper-shore pool on Steephholm, 2.6.73.

Family TERESELLIDAE Malmgren, 1867

Amphitrite affinis Malmgren, 1866

Porlock (Gore Point), a single record, 12.7.68 – probably in error for *Neoamphitrite figulus*.

Amphitritides gracilis (Grube, 1860)

Recorded as common at Porlock by Bassindale (1943c) [as *Amphitrite*]

Eupolymnia nebulosa (Montagu, 1818)

Recorded by Bassindale (1943c) [as *Polymnia*] as common at Porlock but there was only one subsequent record, Sep. 1973. Listed by Bremner *et al.* (2011) from Hinkley Point Flats.

Lanice conchilega (Pallas, 1766) – Sand-mason worm

Generally scarce as scattered individuals and small patches east to Watchet, rare in Greenaleigh Bay but locally abundant at Minehead. Tubes at Dunster Beach illustrated by Phillips (2011, p. 30). Larvae in Watchet plankton, 10.6.84.

Neoamphitrite figulus (Dalyell, 1853)

Recorded by Bassindale (1941) [as *Amphitrite johnstoni*] from Weston, in mud tubes under stones and on rocks. More recently, it was abundant in mud tubes amongst *Laminaria* holdfasts in Porlock Bay, e.g. 9.2.74.

Nicolea venustula (Montagu, 1818)

Recorded as common at Porlock by Bassindale (1943c), more recently it was the commonest terebellid in Porlock Bay. Two records from Greenaleigh Bay, 20.3.73 and 8.2.74.

Thelepus setosus (Quatrefages, 1866)

Porlock: common and widespread (Bassindale, 1943c). Abundant at Gore Point, 29.8.73, and often recorded in Porlock Bay.

Order SABELLIDA

Family SABELLARIIDAE Johnston, 1865

Sabellaria alveolata (Linnaeus, 1767) – Honeycomb worm

Bassindale (1941) found it rare at Blue Anchor but abundant, near low water mark, at Kilve and at Weston, where it spread onto shingle nearer mean tide level and covered an extensive area. In 2000, it was present on Gore Point and widespread in Porlock Bay, forming a scattered reef near the submerged forest but this was sporadically damaged by bulldozers. At Minehead, a fragmented reef extended over shingle and boulders to the northeast of the Harbour. East of Warren Point, a very extensive reef (c. half a mile) covers cobbles at low water whilst at Blue Anchor there is another large reef at the western extremity of the rock platform. Only scattered individuals are found at Watchet but there is an extensive reef east of the Doniford Stream, extending round into St Audries Bay. Colonies persist at Kilve. Part of the reef at Stolford was illustrated by Phillips (2011, p. 30). A more massive fragmented reef lies around the mouth of the effluent river at Hinkley Point, parts of it over 400mm high (8.9.87). See also Bamber and Coughlan (1987). Bremner *et al.* (2011) claim that the reef occupied 11.6 hectares of the intertidal area between St Audries and Hinkley Point. Present on Steephholm, where the reef lined both sides of the spit, 12.8.95, and appeared very healthy.

Sabellaria spinulosa Leuckart, 1849 – Ross worm

Bassindale (1943c) recorded one at Porlock. More recently, at Porlock and in Greenaleigh Bay. Taken from the intertidal flats at Hinkley Point (Bremner *et al.* 2011).

- Family FABRICIIDAE Rioja, 1923
Fanworms
- Fabricia stellaris*** (Müller, 1774)
On *Corallina* at Hinkley Point (Bamber and Coughlan 1987) [as *F. sabella*], and Bremner *et al.* (2011).
- Fabricioloa baltica*** Friedrich, 1939
In the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Manayunkia aestuarina*** (Bourne, 1883)
At a density of 40 per square metre in liquid mud at Hinkley Point (Bamber and Coughlan 1987).
- Family SABELLIDAE Latreille, 1825
Fanworms
- Pseudopotamilla reniformis*** (Bruguière, 1789)
Common and widespread at Porlock (Bassindale 1943c) [as *Potamilla*]. More recently, common at Porlock, 29.8.73, and found on stones at Minehead, Feb. 1975.
- Family SERPULIDAE Rafinesque, 1815
- Apomatus similis*** Marion and Bobretzky, 1875
It was probably this species that Bassindale (1943c) recorded at Porlock (Gore Point) as *A. ampulliferus* Philippi. One later record: on boulders at Porlock, 12.7.68.
- Filograna implexa*** Berkeley, 1835
Recorded by Bassindale (1943c) as common at Porlock and regularly found there more recently – both on Gore Point and in Porlock Bay. Common at low levels in Greenaleigh Bay. One record from Minehead, 28.8.73. Isolated tubes on Steepholm spit 12.8.95.
- Hydroides norvegicus*** Gunnerus, 1768
This species may possibly have been confused with *F. implexa* by Bassindale (1941) who recorded occasional small tubes at Blue Anchor and Weston. There are no more recent records.
- Janua pagenstecheri*** (Quatrefages, 1865)
Occasional from Porlock to Watchet, although not seen at Minehead. Possibly reaching Kilve (Boyden *et al.* 1977). In the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Laeospira corallinae*** (de Silva and Knight-Jones, 1962)
Very local on *Corallina* at Porlock (Gore Point), but up to 10 tubes per plant.
- Laeospira rupestris*** (Gee and Knight-Jones, 1962)
Rare at Porlock and not seen east of Hurlstone Point.
- Protula tubularia*** (Montagu, 1803)
Only recorded as rare at Porlock by Bassindale (1943c) but, more recently, this was the commonest large serpulid, after *Spirobranchus lamarcki*, on the rocky shores east to Watchet. Only a few at Kilve.
- Spirobranchus lamarcki*** (Quatrefages, 1866) – Keelworm
Bassindale (1941, 1943c) [as *Pomatoceros triqueter*] found it widespread at Porlock (Gore Point and in the Bay) but, elsewhere, he recorded just a single tube at Weston. More recently, generally common west of Minehead, probably most abundant on Hurlstone Point, but definitely uncommon at Blue Anchor, Watchet and Kilve. A few at Sand Point, 18.12.72.
- Spirorbis tridentatus*** Levensen, 1883
Common at Porlock (Gore Point to Hurlstone Point) and locally present east to Minehead.
- Order MYZOSTOMIDA von Graff, 1877
Family MYZOSTOMIDAE Benham, 1896
- Myzostoma cirriferum*** Leuckart, 1836
On a young feather star (*Antedon bifida*), at Porlock, Gore Point, 31.10.74.
- Class CLITELLATA**
Sub-Class OLIGOCHAETA
Order HAPLOTAXIDA
Family TUBIFICIDAE Vejdovsky, 1884
- Paranais litoralis*** (Müller, 1780)
In the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Tubificoides amplivasatus*** (Erséus, 1975)
Taken from the intertidal flats at Hinkley Point (Bremner *et al.* 2011).
- Tubificoides benedii*** (Udekem, 1855)
At a density of 20 per square metre in liquid mud at Hinkley Point, 1984-1986 (Bamber and Coughlan 1987) [as *Peloscoclex benedeni*]. Taken in core samples from the intertidal flats (Bremner *et al.* 2011).
- Tubificoides pseudogaster*** (Dahl, 1960)
Taken in core samples from the intertidal flats at Hinkley Point (Bremner *et al.* 2011).
- PHYLUM SIPUNCULA**
Class SIPUNCULIDEA Cutler and Gibbs, 1985
Order GOLFIGHIDA
Family GOLFIGHIIDAE Stephen and Edmonds, 1972

Golfingia elongata (Keferstein, 1862)

This is the commonest *Golfingia* in the area. One under a stone at Blue Anchor (Bassindale, 1941). Regularly collected, in more recent years, at Porlock and Watchet (and occasionally at sites in between), extending east to Kilve. A search has been made for the superficially similar *G. rimicola* (Gibbs 1973) but no specimens have been obtained.

Golfingia margaritacea (Sars, 1851)

One from Gore Point, 9.2.85. Three from stiff mud under rocks on Steephelm spit, 12.8.95.

Golfingia vulgaris (de Blainville, 1827)

Occasional at Porlock, e.g. 28.2.87, with single records from Greenaleigh Bay and Watchet.

Nephasoma minutum (Keferstein, 1862)

Possibly this species at Blue Anchor, 27.6.68 (Boyden *et al.* 1977) [as *Golfingia minuta*].

PHYLUM ARTHROPODA

Sub-Phylum CRUSTACEA Brünnich, 1772

Class OSTRACODA Latreille, 1802

Order PODOCOPIDA G. O. Sars, 1866

Family CYTHERIDAE Baird, 1850

Cythere lutea O. F. Müller, 1785

Gore Point, 1977, 1978 (Horne 1982). Hinkley Point, in *Corallina* cryptofaunal patch (Bremner *et al.* 2011).

Family LEPTOCYTHERIDAE Hanai, 1957

Leptocythere tenera (Brady, 1868)

Gore Point, 1977, 1978 (Horne 1982).

Family HEMICYTHERIDAE Puri, 1953

Aurila convexa (Baird, 1850)

Gore Point, 1977, 1978 (Horne 1982). Illustrated by Athersuch *et al.* (1989, Plate 5.1).

Aurila woutersi Horne, 1986

Gore Point, type locality. Illustrated by Athersuch *et al.* (1989, Plate 5.2).

Hemicythere villosa (Sars, 1865)

Hinkley Point, among the *Corallina* cryptofaunal patch (Bremner *et al.* 2011).

Heterocythereis albomaculata (Baird, 1838)

Gore Point, 1977, 1978 (Horne 1982). Hinkley Point, among the *Corallina* cryptofaunal patch (Bremner *et al.* 2011).

Family LOXOCONCHIDAE Sars, 1925

Bonnyannella robertsoni (Brady, 1868)

Specimens from Gore Point were described by Athersuch and Horne (1984).

Elofsonia baltica (Hirschmann, 1909)

Specimens from Sand Point were described by Athersuch and Horne (1984).

Hirschmannia viridis (O. F. Müller, 1785)

Gore Point, 1977, 1978 (Horne 1982). Hinkley Point, among the *Corallina* cryptofaunal patch (Bremner *et al.* 2011).

Loxoconcha rhomboidea (Fischer, 1855)

Gore Point, 1977, 1978 (Horne 1982); specimens collected there were figured by Horne and Whittaker (1985). Hinkley Point, in the *Corallina* cryptofaunal patch (Bremner *et al.* 2011).

Palmoconcha laevata (Norman, 1865)

Gore Point, 1977, 1978 (Horne 1982) [as *Lindisfarnia*]. A Gore Point specimen was illustrated by Athersuch *et al.* (1989, Plate 6.4).

Family CYTHERURIDAE Müller, 1894

Cytheropteron dorsocostatum Whatley and Masson, 1980

Gore Point, 1977, 1978 (Horne 1982).

Hemicytherura cellulosa (Norman, 1865)

Gore Point, 1977, 1978 (Horne 1982).

Hemicytherura hoskini Horne, 1981

Gore Point, type location (Horne 1982). A holotype illustrated by Athersuch *et al.* (1989, Plate 6.10).

Semicytherura angulata (Brady, 1868)

Blue Anchor. A specimen illustrated by Athersuch *et al.* (1989, Plate 7.4).

Semicytherura nigrescens (Baird, 1838)

Collected from the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).

Semicytherura striata (Sars, 1866)

Blue Anchor. A specimen illustrated by Athersuch *et al.* (1989, Plate 7.8). Collected from the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).

Semicytherura tela Horne and Whittaker, 1980

Blue Anchor – type locality. A specimen illustrated by Athersuch *et al.* (1989, Plate 7.9).

Family BYTHOCYTHERIDAE Sars, 1866

Bythocythere bradyi Sars, 1926

Gore Point, 1977, 1978 (Horne 1982).

Sclerochilus gewemuelleri Dubowski, 1939

Gore Point, 1977, 1978 (Horne 1982). Record confirmed as this species by Athersuch *et al.* (1989), from Porlock Bay.

Sclerochilus schornikovi Athersuch and Horne, 1987

Gore Point – type locality.

- Family PARADOXOSTOMATIDAE Brady and Norman, 1889
- Paradoxostoma abbreviata*** Sars, 1866
Gore Point, 1977, 1978 (Horne 1982).
- Paradoxostoma bradyi*** Sars, 1928
Gore Point, 1977, 1978 (Horne 1982); specimens collected from there were figured by Horne and Whittaker (1985).
- Paradoxostoma nealei*** Horne and Whittaker 1985
Specimens from Gore Point were figured by Horne and Whittaker (1985).
- Paradoxostoma normani*** Brady, 1868
Gore Point, 1977, 1978 (Horne 1982); specimens of 'form B' from the Bristol Channel and Severn Estuary were figured by Horne and Whittaker (1985).
- Paradoxostoma porlockense*** Horne and Whittaker 1985
Gore Point – type locality.
- Paradoxostoma variabile*** (Baird, 1835)
Gore Point, 1977, 1978 (Horne 1982); large populations recorded on littoral algae in the Bristol Channel and Severn Estuary (Horne and Whittaker 1985). Collected from the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Paracytherois flexuosa*** (Brady, 1866)
Gore Point, 1977, 1978 (Horne 1982); identification confirmed and illustrated by Athersuch *et al.* (1989).
- Class COPEPODA** Milne-Edwards, 1840
Order HARPACTICOIDA Sars, 1903
Family CANTHOCAMPTIDAE Lang, 1936
- Mesochra pygmaea*** (Claus, 1863)
Collected from the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Family DACTYLOPUSIIDAE Lang, 1936
- Dactylopusia micronyx*** G. O. Sars, 1905
Collected from the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011)
- Paradactylopodia latipes*** (Boeck, 1865)
Probably this species collected from the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Family HARPACTICIDAE Dana, 1846
- Harpacticus obscurus*** Scott, 1895
Collected from amongst *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Tigriopus brevicornis*** (O. F. Müller, 1776)
Common in high-level rock pools on Brean Down and Birnbeck Island (Weston) in 1972 and 1973. Numerous on the western side of Hurlstone Point, 22.6.78.
- Family LAOPHONTIDAE T. Scott, 1904
- Paronychocamptus curticaudatus*** (Boeck, 1865)
Collected from amongst the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Family MIRACIDAE Dana, 1846
- Amphiascoides subdebilis*** (Willey, 1935)
Collected from amongst the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Family THALESTRIDAE G. O. Sars, 1905
- Parathalestris intermedia*** Gurney, 1930
Collected from amongst the *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).
- Class CIRRIPIEDIA** Burmeister, 1834
Barnacles
- Super-Order THORACICA Darwin, 1854
Order LEPADIFORMES Buckeridge and Newman, 2006
Stalked barnacles
- Family LEPADIDAE Darwin, 1851
- Lepas anatifera*** Linnaeus, 1758
Stranded on drift wood at Porlock (Gore Point), Feb. 1984, on a fishing float, 19.2.88, and at Hurlstone Point on a bottle, 22.10.83.
- Order SESSILIA Lamarck, 1818
Acorn barnacles
- Sub-Order VERRUCOMORPHA Pilsbry, 1916
Family VERRUCIDAE Darwin, 1854
- Verruca stroemia*** (O. F. Müller, 1776)
Recorded by Bassindale (1943c) at Porlock; the barnacle is now widespread and common under boulders on the lower shore from Porlock to Minehead. Occasional at Blue Anchor.
- Sub-Order BALANOMORPHA Pilsbry, 1916
Family CHTHAMALIDAE Darwin, 1854
- Chthamalus montagui*** Southward, 1976
Bassindale (1941, 1943c) only recorded *Chthamalus* from Porlock. *C. montagui* is now widespread and abundant in Porlock Bay,

extending east to Minehead. Scarce at Blue Anchor, it apparently reached its eastern limit on the western mole of Watchet Harbour in 1975 but a few individuals were seen in Helwell Bay in 1983 and a single specimen noted on the south side of Brean Down in 1980. Southward (1976) included a record from Weston in 1954.

Chthamalus stellatus (Poli, 1791)

Bassindale (1943c) recorded *Chthamalus* from Porlock. On Hurlstone Point, Southward (1976) found that 34% of *Chthamalus* at mean low water neaps were of this species, but only 2% at mean high water neaps.

Family AUSTROBALANIDAE Newman and Ross, 1976

Austrominius modestus (Darwin, 1854)

This immigrant Australasian species was first recorded (in Somerset) in 1947 at Blue Anchor by Miss M. Harrison (Bassindale 1947) [as *Elminius*]. It has since spread to all of the estuarine shores, becoming the dominant barnacle from Minehead to Sand Point, including Steephholm.

Family ARCHAEOBALANIDAE Newman and Ross, 1976

Semibalanus balanoides (Linnaeus, 1767)

Bassindale (1941, 1943c) [as *Balanus*] could only find spat at Porlock but he recorded adults as fairly common at Blue Anchor and Kilve, though rare on Steephholm and at Weston. The species is now common on suitable hard surfaces east to Minehead (with the notable exception of Hurlstone Point where it may be sparse in some years) and may be locally common as far east as Brean Down. It remains scarce on Steephholm and at Weston. If temperatures rise further, this northern species may be out-competed by *Austrominius modestus*.

Family BALANIDAE Leach, 1806

Balanus balanus (Linnaeus, 1758)

Recorded as rare at Porlock by Bassindale (1943c) [as *B. porcatus*]; more recently, scattered individuals were widespread on the lower shore at Porlock (Gore Point and around the Bay) and at the western end of Greenaleigh Bay.

Balanus crenatus Bruguière, 1789

Although not mentioned by Bassindale (1941, 1943c), large individuals are common or abundant on the lower shore between Porlock (First Rocks) and Minehead. To the east, they

are progressively replaced by *Amphibalanus improvisus*. *B. crenatus* is still the dominant lower shore barnacle at Blue Anchor, but not usually so at Watchet. There appear to have been no records east of Black Rock (St Audries) before Bremner *et al.* (2011).

Amphibalanus improvisus (Darwin, 1854)

Bassindale (1941, 1943c) recorded it [as *Balanus*] from Porlock, and from Blue Anchor to Sand Point. It was not found west of Minehead, 1968-2003. East of Warren Point, it progressively replaces *Balanus crenatus* on the lower shore. It is usually the dominant balanid barnacle at Watchet and increases in abundance up-channel. It grew well in the Hinkley Point Fish Farm (1980) and occurs on rocks in the effluent river below the power station. It was well-established on Steephholm, although the dead far outnumbered the living on the spit, 12.8.95.

Perforatus perforatus (Bruguière, 1789)

Although Bassindale (1943c) [as *Balanus*] recorded the species as rare at Porlock, more recently it was locally common there (abundant on the western side of Hurlstone Point at extreme low water) and occasional as far east as Minehead. A single large dead specimen was seen on Dunster Beach, 7.4.85. Not seen further east. Bassindale (1941) discounted Matthews' (1924) records from Brean Down, suggesting confusion with *Amphibalanus improvisus*.

Super-Order ACROTHORACICA Gruvel, 1905

Order LITHOGLYPTIDA Kolbasov, Newman and Hoeg, 2009

Burrowing barnacles

Family TRYPETESIDAE Stebbing, 1910

Trypetesa lampas (Hancock, 1849)

Three in the columella of a large *Buccinum* shell inhabited by the hermit crab *Pagurus bernhardus* at Porlock, Gore Point, 2.11.86. The species is undoubtedly more abundant than this record implies; the openings of the barnacle's burrows are only visible using a handlens.

Super-Order RHIZOCEPHALA Müller, 1862

Order KENTROGONIDA Delage, 1884

Parasitic barnacles

Family SACCULINIDAE Lilljeborg, 1860

Sacculina* cf. *carcini Thompson, 1836

On *Liocarcinus holsatus* caught on the screens at Hinkley Point Power Station. 56% of a sample of 32 crabs examined, 18.4.84, were sacculinised,

one had two externae. Many fewer *L. holsatus* were caught, 15.6.84, but about half were sacculinised. Note: although some authorities record that *S. carcini* attacks both of the crabs *Carcinus maenas* and *Liocarcinus holsatus*, in Milford Haven (Crothers 1966), *Sacculina* attacked *C. maenas* but not *L. holsatus* [as *Portunus holsatus*] whereas, in Somerset, it attacks *L. holsatus* but not *C. maenas*. Is it likely that these are the same species of barnacle?

Drepanorchis neglecta (Fraisie, 1877)

Probably this species parasitising *Inachus phalangium* at Porlock (Gore Point), 18.3.84.

Class MALACOSTRACA Latreille, 1802

Super-Order PERACARIDA Calman, 1904

Order CUMACEA Krøyer, 1846

Family BODOTRIIDAE T. Scott, 1901

Cumopsis goodsir (van Beneden, 1861)

On sandy beaches; common at Minehead and present at Blue Anchor, St Audries Bay and Weston. Listed from the foreshore flats at Hinkley Point by Bremner *et al.* (2011).

Bodotria arenosa (Goodsir, 1843)

Several taken in a plankton haul, Watchet Harbour, 30.9.85.

Iphinoe trispinosa (Goodsir, 1843)

Amongst hydroids in Greenaleigh Bay, 9.9.83.

Family DIASTYLIDAE Bate, 1856

Diastylis rathkei (Krøyer, 1841)

In mud and shallow water at low tide, at Kilve and Stolford (Bassindale 1941). More recent records from Minehead, 22.5.73, and Hinkley Point (Bamber and Coughlan 1987; Bremner *et al.* 2011). Generally distributed from Hinkley Point to Sand Point (Boyden and Little 1973).

Order TANAIDACEA Dana 1849

Sub-Order APSEUDOMORPHA Sieg, 1980

Family APSEUDIDAE Leach, 1814

Apseudes talpa (Montagu, 1808)

Collected at extreme low water in Porlock Bay, 8.10.83.

Sub-Order TANAIDOMORPHA Sieg, 1980

Family TANAISSIDAE Bird and Larsen, 2009

Tanaissus lilljeborgi (Stebbing, 1891)

This is the “unidentified tanaid” that Boyden and Little (1973) found throughout the year all over the beach at Minehead. Taken in core samples from the intertidal flats on Hinkley Point (Bremner *et al.* 2011).

Order ISOPODA Latreille, 1817

Sub-Order CYMOTHOIDA Wägele, 1989

Family ANTHURIDAE Leach, 1814

Cyathura carinata (Krøyer, 1847)

Blue Anchor and Kilve (Bassindale 1941). Occasional at Minehead and Kilve. Recorded at Hinkley Point by Bamber and Coughlan (1987), reaching a density of 375 per square metre in the outfall headworks sand. A single specimen from the *Corallina* run-offs, 17.5.92 (Bamber and Irving 1993). Listed by Bremner *et al.* (2011).

Family CIROLANIDAE Dana, 1852

Eurydice affinis Hansen, 1905

Single individuals collected from the upper-shore sand at Greenaleigh Bay, Sep. and Oct. 1983, and Minehead, summer 1973.

Eurydice pulchra Leach, 1815

Kilve and Weston (Bassindale 1941). More recently, it could be found anywhere along this coast but seems to be especially common at Weston. Recorded at Hinkley Point by Bamber and Coughlan (1987). Several taken in a tow net by night in Watchet Harbour, 19.8.85.

Family HEMIONISCIDAE Bonnier, 1900

Hemioniscus balani (Buchholz, 1866)

An abundant parasite of the acorn barnacle *Semibalanus balanoides*, recorded at Blue Anchor by Bassindale (1941).

Sub-Order SPHAEROMATIDEA Wägele, 1989

Family SPHAEROMATIDAE Latreille, 1825

Dynamene bidentata (Adams, 1800)

In old *Perforatus* shells and on red algae in pools at Porlock: young females common at Gore Point in Aug. 1973; an adult male from Porlock Bay, 8.10.83; and an adult male with a harem of females from below the submerged forest, 2.3.95.

Lekanesphaera monodi (Arcangeli, 1934)

Regularly seen, and probably common, in empty piddock holes at Watchet. Recorded in the outfall channel at Hinkley Point by Bamber and Coughlan (1987) [as *Sphaeroma*] and in the *Corallina* run-offs by Bamber and Irving (1993) [as *Sphaeroma*]. Taken in core samples (Bremner *et al.* 2011) [as *Sphaeroma*].

Lekanesphaera rugicauda (Leach, 1814)

In salt-marsh pools at Porlock Weir. Probably this species in Porlock Bay Lagoon, 1997 and 1999.

Sphaeroma serratum (Fabricius, 1787)

Bassindale (1941) found it rare at Kilve. More recent records are from Blue Anchor, Watchet

(taken in tow nets at night, 10.6.84 and 19.8.85 (common), and one by day, 6.11.86) and Hinkley Point (a record on 8.9.87 being from the effluent river).

Sub-Order LIMNORHIDEA Brandt and Poore, 2002
Family LIMNORIIDAE White, 1850

Limnoria lignorum (Rathke, 1799) – Gribble

A single individual [not in wood] from Porlock, but abundant in the piles of Weston Old Pier, 22.4.39, with a few *Chelura* (Bassindale 1941, 1943c). All the *Limnoria* collected from old groynes at Porlock, 9.2.74 and subsequently, have proved to be of this species.

Sub-Order VALVIFERA Sars, 1882
Family IDOTEIDAE Samouelle, 1819

Idotea balthica (Pallas, 1772)

On lower shore algae at Porlock, Gore Point, 15.2.68, 8.2.89. Recorded at Hinkley Point by Bamber and Coughlan (1987) and Bremner *et al.* (2011). Young *Idotea*, probably of this species, taken in the plankton of Watchet Harbour, 19.8.85.

Idotea chelipes (Pallas, 1766)

Recorded as *Idotea viridis* from Porlock (Bassindale 1943c). Steepholm (Yonge and Lloyd 1939). From *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).

Idotea emarginata (Fabricius, 1793)

Hinkley Point, taken in a seine net over intertidal flats at high tide (Bremner *et al.* 2011).

Idotea granulosa Rathke, 1843

Bassindale (1941) caught both males and females in small numbers from Weston to Aust. More recently the range extended west to Porlock. Recorded at Hinkley Point by Bamber and Coughlan (1987) where it was abundant in the *Corallina* run-offs, and present in *Corallina* cryptofaunal patch (Bremner *et al.* 2011).

Idotea linearis (Pennant, 1777)

One in the shrimp nets at Stolford, 10.6.39 (Bassindale 1941), and another from Porlock, Gore Point, 27.2.71.

Idotea neglecta Sars, 1897

Hinkley Point: taken in a seine net over intertidal flats at high tide and in core samples (Bremner *et al.* 2011).

Stenosoma lancifer Miers, 1881

Porlock, Gore Point, occasional at low water of spring tides, bright red in colour; one, 17.2.84, two more, 1.3.87, and another 10.8.95.

Family ARCTURIDAE Dana, 1849

Astacilla longicornis (Sowerby, 1806)

Common on *Tubularia* tufts at extreme low water. Blue Anchor, 26.8.76, Watchet (West Bay), 25.9.76 and Watchet (Helwell Bay), 19.8.74. Searched for but not found again until 15.10.85, when common at Watchet (Helwell Bay). One only at Watchet (West Bay), 2.3.87.

Sub-Order ASELOTOTA Latreille, 1802

Family JANIRIDAE Sars, 1897

Jaera albifrons group of species

It is impossible to reconcile the older records of *J. albifrons* (Fabricius) and *J. marina* (Fabricius) with the four species now recognised – *J. albifrons* Leach, *J. forsmani* Bocquet, *J. ischiosetosa* Forsman and *J. prae-hirsuta* Forsman. Any or all of these might be expected within the area (see Naylor 1972; Naylor and Brandt 2015). Widespread and common at Porlock, and common from Blue Anchor to Sand Bay (Bassindale 1941, 1943c). Recorded on seaweeds at Hinkley Point by Bamber and Coughlan (1987).

Jaera albifrons Leach, 1814

Generally distributed in Greenaleigh and Minehead Bays in 1974 and 1975. Recorded in the outfall channel at Hinkley Point by Bamber and Coughlan (1987) and present in *Corallina* cryptofaunal patch (Bremner *et al.* 2011).

Jaera prae-hirsuta Forsman, 1849

Very common in the *Corallina* run-offs – effectively a rock-pool environment with negligible depth and gently flowing water supporting dense mats of *Corallina officinalis* – on Hinkley Point. Brooding females were present and recruitment of juveniles to the population occurred in late winter (Bamber and Irving 1993; Bremner *et al.* 2011).

Janira maculosa Leach, 1813

Fairly common at Porlock (Bassindale 1943c). Common under stones near low water mark at Blue Anchor and Kilve, less so at Weston (Bassindale 1941); now generally distributed under stones from Porlock to Sand Point.

Family MUNNIDAE Sars, 1897

Munna minuta Hansen, 1916

One or two individuals identified from Porlock, Minehead and Blue Anchor, Sep. 1973.

- Sub-Order ONISCIDEA Latreille, 1802
Family LIGIDAE Leach, 1814
Ligia oceanica (Linnaeus, 1767) – Sea slater
Generally distributed around high water mark on all suitable shores, including those of Steephholm. Most often seen at night on harbour walls and other man-made structures.
- Order AMPHIPODA Latreille, 1816
Sub-Order SENTICAUDATA Lowry and Myers, 2013
Family CHEIROCRATIDAE d' Udekem d' Acoz, 2010
Cheirocratus sundevalli (Rathke, 1843)
One male from Porlock, Gore Point (Bassindale 1943c).
- Family HYALIDAE Bulycheva, 1957
Apothyale prevostii (Milne-Edwards, 1830)
Blue Anchor and Weston (Bassindale 1941) [as *Hyale nilssonii*]. Hinkley Point. Listed in the fauna of *Corallina* cryptofaunal patch by Bremner *et al.* (2011).
Hyale perieri (Lucas, 1849)
Hinkley Point. Listed in the fauna of *Corallina* cryptofaunal patch by Bremner *et al.* (2011).
- Family TALITRIDAE Rafinesque, 1815
Orchestia gammarellus (Pallas, 1766)
Abundant at Blue Anchor, present at Kilve (Bassindale 1941). More recently, common in salt-marsh pools at Porlock Weir, 8.9.83.
Talitrus saltator (Montagu, 1808)
Common all along the coast (Matthews 1924). One at Kilve (Bassindale 1941). More recently, common below the sand dunes at Burnham.
- Family MAERIDAE Krapp-Schickel, 2008
Maera grossimana (Montagu, 1808)
Collected from Watchet (Helwell Bay), 14.8.97.
Orthomaera othonis (Milne-Edwards, 1830)
Rare at Porlock, females without eggs (Bassindale 1943c) [as *Maera*].
- Family MELITIDAE Bousfield, 1973
Melita palmata (Montagu, 1804)
Rare at Kilve and Weston (Bassindale 1941). Recorded in the outfall channel at Hinkley Point by Bamber and Coughlan (1987) and, in large numbers, in the *Corallina* run-off channels by Bamber and Irving (1993). In the *Corallina* cryptofaunal patch (Bremner *et al.* 2011).
- Sub-Order GAMMARIDEA Latreille, 1802
Family AMPELISCIDAE Krøyer, 1842
Ampelisca Krøyer, 1842 sp.
One from Blue Anchor, 22.4.40 (Bassindale 1941).
- Family GAMMARIDAE Leach, 1814
Echinogammarus marinus (Leach, 1815)
Recorded by Bassindale (1941, 1942a, 1943c) [as *Marinogammarus*] from Porlock Bay, Blue Anchor, Kilve, and Weston. Widespread, but not as common as he had expected. Hinkley Point: one taken from the strainers, 15.6.84; on the foreshore (Bamber and Coughlan 1987), and listed by Bremner *et al.* (2011) [as *Chaetogammarus*].
Echinogammarus obtusatus (Dahl, 1938)
Recorded as common at Blue Anchor, Kilve and Weston by Bassindale (1941, 1942a) [as *Marinogammarus*] and a few on Steephholm (Yonge and Lloyd 1939) [as *Marinogammarus*].
Echinogammarus stoerensis (Reid, 1938)
Recorded from Porlock Bay, Blue Anchor and Kilve by Bassindale (1941, 1942a, 1943c) [as *Gammarus*].
Gammarus crinicornis Stock, 1966
Caught in a seine net on the foreshore at Hinkley Point (Bremner *et al.* 2011).
Gammarus duebeni Liljeborg, 1852
In the stream at Porlock, Gore Point (Bassindale 1943c) but not in the upper parts of the Estuary (Bassindale 1941). One from the strainers at Hinkley Point, 18.4.84. Recorded in the plankton at Hinkley Point by Henderson *et al.* (1984).
Gammarus finmarchicus Dahl, 1938
Common at low water neaps below First Rocks, Porlock Weir, Apr. 1985.
Gammarus locusta Linnaeus, 1758
Rare at Kilve and Weston (Bassindale 1941, 1942a). Up to 60,750 per square metre in the *Corallina* run-off channels on Hinkley Point (Bamber and Irving 1993). Listed by Bremner *et al.* (2011).
Gammarus oceanicus Segestråle, 1947
A single individual recorded in the plankton at Hinkley Point, Feb. 1984 (Henderson *et al.* 1984).
Gammarus salinus Spooner, 1947
Recorded by Bassindale (1941, 1942a) [as *G. zaddachi* forms A and B] at most sites upstream of Blue Anchor. It was abundant above Weston in the summer of 1939. Recorded in the plankton at Hinkley Point by Henderson *et al.* (1984) and

on the foreshore there by Bamber and Coughlan (1987) and Bremner *et al.* (2011).

Gammarus zaddachi Sexton, 1912

One immature from Porlock but abundant in the stream at Kilve Pill (Bassindale 1941, 1943c, as *G. zaddachi* Sexton [typical variety] Spooner). More recent records are also from streams running over the beaches at Porlock and Kilve. Taken on the foreshore at Hinkley Point, using an epifaunal sled at high tide (Bremner *et al.* 2011).

Family OEDICEROTIDAE Lilljeborg, 1865

Pontocrates altamarinus (Bate and Westwood, 1862)

One young male from Kilve, 21.5.39 (Bassindale 1941). Collected in core samples from intertidal flats off Hinkley Point (Bremner *et al.* 2011).

Family BATHYPOREIIDAE d' Udekem d' Acoz, 2011

Bathyporeia elegans Watkin, 1938

One young male from Kilve, 21.5.39 (Bassindale 1941). Collected in core samples from intertidal flats off Hinkley Point (Bremner *et al.* 2011).

Bathyporeia pelagica (Bate, 1856)

Bassindale (1941) recorded one in the sand of Blue Anchor Bay. More recently, common at Minehead, but perhaps less so at Blue Anchor. Recorded as occasional in the plankton at Hinkley Point by Henderson *et al.* (1984) and in sand on the foreshore by Bamber and Coughlan (1987); also listed by Bremner *et al.* (2011).

Bathyporeia pilosa Lindström, 1855

Common all over the sandy shore at Minehead and in St Audries Bay. To be found on the upper shore wherever sand accumulates from Blue Anchor to Sand Point. Collected in core samples from intertidal flats off Hinkley Point (Bremner *et al.* 2011).

Bathyporeia sarsi Watkin, 1938

Collected in core samples from intertidal flats off Hinkley Point (Bremner *et al.* 2011).

Family HAUSTORIIDAE Stebbing, 1906

Haustorius arenarius (Slabber, 1769)

Bassindale (1941) found one at Blue Anchor. More recently, recorded on sandy beaches from Greenaleigh Bay and Minehead; commonest in the west. Searched for unsuccessfully in the coarse sand of Selworthy Sand. Listed by Bremner *et al.* (2011) from core samples taken in flats off Hinkley Point.

Family UROTHOIDAE Bousfield, 1978

Urothoe brevicornis Bate, 1862

Greenaleigh Bay 17.8.97. This is the dominant haustoriid amphipod at Minehead, occupying a zone a little below that of *Haustorius arenarius* and reaching densities of 140 per square metre, Jul. 1973 (see Boyden and Little (1973) and Little and Boyden (1976)).

Urothoe poseidonis Reibisch, 1905

One from the middle shore at Blue Anchor, 9.8.72.

Family CALLIOPHIDAE G. O. Sars, 1895

Apherusa bispinosa (Bate, 1857)

One male from Porlock (Bassindale 1943c). Rare in the *Corallina* run-off channels on Hinkley Point in 1992 (Bamber and Irving 1993), and listed by Bremner *et al.* (2011).

Calliopius laeviusculus (Krøyer, 1838)

Bassindale (1941, 1942a, 1943c) [under both this name and *C. crenulatus* Chevreux and Fage] recorded three males from Porlock, a few at Kilve in May and Aug. 1939, and abundant at Weston on the lower shore and in middle-shore pools. Recorded on the foreshore at Hinkley Point by Bamber and Coughlan (1987) and a single record from a *Corallina* run-off channel on 27.9.92 (Bamber and Irving 1993). Listed from the *Corallina* cryptofaunal patch by Bremner *et al.* (2011).

Family GAMMARELLIDAE Bousfield, 1977

Gammarellus angulosus (Rathke, 1843)

Several large adults collected at Porlock (Gore Point) 27.2.71.

Gammarellus homari (Fabricius, 1779)

Immatures common at Porlock, First Rocks (Bassindale 1943c), occasional at Kilve and Stolford and common at Weston (Bassindale 1941, 1942a). Recorded more recently from Kilve, 7.2.74, and the screens at Hinkley Point, 18.4.84. Common in the plankton and on the screens at Hinkley Point (Henderson *et al.* 1984); rare in the *Corallina* run-off channels there in 1992 (Bamber and Henderson 1993).

Family PLEUSTIDAE Buchholz, 1874

Parapleustes bicuspis (Krøyer, 1838)

Two specimens "probably of this species" at Kilve, 18.8.39 (Bassindale 1941) [as *Neopleustes*].

- Family DEXAMINIDAE Leach, 1814
Dexamine spinosa (Montagu, 1813)
 Recorded at Porlock by Bassindale (1943c).
- Family AMPITHOIDAE Stebbing, 1899
Ampithoe rubricata (Montagu, 1808)
 Recorded by Bassindale (1941, 1943c) from Porlock, Blue Anchor, Kilve and Stolford. Most common in the west. Common, more recently, at Porlock.
- Family COROPHIIDAE Leach, 1814
Corophium arenarium Crawford, 1937
 Densities of up to 1,600 per square metre were recorded on Steart Flats (Boyden and Little 1973).
Corophium volutator (Pallas, 1766)
 One at Kilve (Bassindale 1941). More recently, it was sometimes common in Porlock Weir salt-marsh and always so in the submerged forest. First noted in Porlock Bay Lagoon in summer 1997; still there Jun. 1999. Usually present in Minehead Harbour. This species has a very local distribution at Blue Anchor and in muddy beaches between Steart Flats and Sand Bay. Common in the plankton at Hinkley Point, possibly from culvert populations (Henderson *et al.* 1984); listed from the foreshore flats by Bremner *et al.* (2011).
- Family CHELURIDAE Allman, 1847
Chelura terebrans Philippi, 1839
 With *Limnoria* in the piles of Weston Old pier (Bassindale 1941).
- Family DULICHIDAE Laubitz, 1983
Dyopodos monacantha (Metzger, 1875)
 Rare in the plankton at Hinkley Point, Jul. 1982 (Henderson *et al.* 1984).
Dyopodos porrectus Bate, 1857
 In a pool at Porlock, Gore Point (Bassindale 1943c) [as *Dulchia porrecta*].
- Family CAPRELLIDAE Leach, 1814
 Skeleton shrimps
Pseudoprotella phasma (Montagu, 1804)
 Rare in the plankton at Hinkley Point (Henderson *et al.* 1984) [as *Protella*].
Caprella fretensis Stebbing, 1878
 Single records from Porlock, Gore Point, 28.8.76, 8.9.83. Several collected with red algae, 25.9.84, one giving birth.
Caprella linearis (Linnaeus, 1767)
 Very numerous on tufts of *Tubularia indivisa* collected at Blue Anchor and/or Watchet, 19.8.74, 26.8.76, 25.9.76, 26.9.84, 15.10.85; much less abundant at Black Rock (St Audries), 16.10.85. One record from Kilve, 7.2.74. Searched for but not found on *T. indivisa* at Hinkley Point, Sep. 1976, but recorded as occasional in the plankton there by Henderson *et al.* (1984).
- Unidentified caprellids
 Common on some tides at Porlock (Gore Point) and in Greenaleigh Bay; occasionally taken between Blue Anchor and Kilve.
- Sub-Order HYPERIIDEA Milne Edwards, 1830
 Family HYPERIIDAE Dana, 1852
Hyperia galba (Montagu, 1815)
 In the radial canals of jellyfish stranded near Minehead: from *Rhizostoma octopus*, 12.2.68, and from *Chrysaora hysoscella*, 20.8.74.
- Order MYSIDACEA Hayworth, 1825.
 Opossum shrimps
 Sub-Order MYSIDA Hayworth, 1825.
 Family MYSIDAE Hayworth, 1825.
Siriella armata (H. Milne-Edwards, 1837)
 One from a rock pool at Porlock, Gore Point, 15.9.73.
Gastrosaccus spinifer (Goës, 1864)
 Rare in shrimp nets at Stolford, 9.6.39 (Bassindale 1941). Common or abundant during spring and autumn at Hinkley Point, 1980-1984 (Henderson *et al.* 1984). This species only enters Bridgwater Bay briefly in spring and late autumn, making seasonal migrations akin to those of *Mesopodopsis slabberi* and *Schistomysis spiritus* but displaced slightly west (Bamber and Henderson 1994). In core samples on Hinkley Point (Bremner *et al.* 2011).
Anchialina agilis (G. O. Sars, 1877)
 Rare, in the plankton, at Hinkley Point, 1980-1994 (Henderson *et al.* 1984; Bamber and Henderson 1994).
Paramysis arenosa (G. O. Sars, 1877)
 A single individual in the plankton at Hinkley Point, Mar. 1984 (Henderson *et al.* 1984). Considered as rare by Bamber and Henderson (1994).
Schistomysis kervillei (G. O. Sars, 1885)
 Occasional, in the plankton, at Hinkley Point, 1980-1994 (Henderson *et al.* 1984; Bamber and Henderson 1994).
Schistomysis ornata (G. O. Sars, 1864)
 One netted at Kilve, 21.5.39 (Bassindale 1941).

Schistomysis spiritus (Norman, 1860)

A few in the Stolford shrimp nets, 9.6.39 (Bassindale 1941). Abundant in the plankton at Hinkley Point, 1980-1994; the commonest mysid overall. Peak numbers in September following juvenile recruitment, but becoming effectively absent in winter. Females predominate – which is interpreted as the females occurring landward from juveniles and the males. Males stay in Bridgwater Bay all summer; females migrate west into more saline water to release their young. Falling salinities in winter induces a westward movement of the whole population (Henderson *et al.* 1984; Bamber and Henderson 1994).

Praunus flexuosus (Müller, 1776)

Sometimes taken in the Stolford shrimp nets in 1939 (Bassindale 1941). Frequent, in the midwinter plankton, at Hinkley Point, 1980-1984 (Henderson *et al.* 1984). Both this species and *Neomysis integer* favour low salinities and so are only taken in Bridgwater Bay in winter (Bamber and Henderson 1994).

Praunus inermis (Rathke, 1843)

Two collected at Porlock, Gore Point, in Aug. 1973.

Mesopodopsis slabberi (van Beneden, 1861)

Bassindale (1941) recorded a few from Kilve and Stolford. From the late 1960s to the late 1990s, this was much the commonest mysid in the Porlock-Watchet area, sometimes found in pools at low tide, and always the most conspicuous component of summer near-shore plankton hauls taken off Minehead and Watchet. Apparently, most abundant inside Watchet harbour. Abundant in the late-summer plankton at Hinkley Point, 1980-1984; absent in winter (Henderson *et al.* 1984). There seemed to be a May immigration of adult females into Bridgwater Bay, followed by a seaward movement to release young in June. From late July to September there was a second immigration of adults and late juvenile instars which remained in the Bay until October (Bamber and Henderson 1994).

Neomysis integer (Leach, 1814)

Abundant in summer, up-channel from Stolford and present, though not common, in winter, up-channel from Kilve. Much commoner on open coasts than *Praunus flexuosus* (Bassindale, 1941). Common at Porlock, Jul. 1973 (Boyden *et al.* 1977). In salinities varying between 2‰ and 26‰ in Porlock Weir salt-marsh, 26.11.85 and 13.1.86 (Seaward 1986). Frequent in the plankton at Hinkley Point, 1980-1984 (Henderson *et al.*

1984). Both this species and *P. flexuosus* favour low salinities and so are only taken in Bridgwater Bay in winter (Bamber and Henderson 1994). Common at Weston, Jul. 1973 (Boyden *et al.* 1977).

Sub-Class EUCARIDA Calman, 1904

Order EUPHAUSIACEA Dana, 1852

Family EUPHAUSIIDAE Dana, 1852

Meganctiphanes norvegica (M. Sars, 1857) – Krill

Single records from Stolford shrimp nets, 7.7.39 and 19.7.39, and four from Burnham, 17.10.39 (Bassindale 1941). Taken in the plankton at Hinkley Point, Jun. 1981; Jul., Nov. and Dec. 1983; and Feb. 1984. Never in large numbers (Henderson *et al.* 1984).

Order DECAPODA Latreille, 1803

Sub-Order PLEOCYEMATA Burkenroad, 1963

Infra-Order CARIDEA Dana, 1852

Family PASIPHAEIDAE Dana, 1852

Pasiphaea sivado (Risso, 1816)

Abundant in the Stolford shrimp nets during the summer (Bassindale 1941). Recorded from Bridgwater by Stebbing (1906). A single specimen stranded on the shore at Watchet, 6.6.86. Regularly seen, 1970-85, on the screens at Hinkley Point. Abundant there during the summer, 1980-1984, rare at other times of the year. Peak numbers at high tide (Henderson *et al.* 1984). It is only captured on the Hinkley Point screens in large numbers around high water because it is a pelagic species favouring deeper offshore waters (Bamber and Henderson 1994). The exceptionally high numbers on the screens in 1999 and 2000 made it the second most abundant macro-crustacean in these catches (Henderson and Seaby 2001); fewer in 2001 (Langston *et al.* 2003).

Family PALAEMONIDAE Rafinesque, 1815

Palaemon elegans Rathke, 1837

One from Burnham (Bassindale 1941) [as *Leander squilla*], and another from Porlock, 16.8.74.

Palaemon longirostris Milne Edwards, 1837

Single specimens on the screens at Hinkley Point, Jun. 1982 and Nov. 1983 (Henderson *et al.* 1984). The species prefers fresher water.

Palaemon serratus (Pennant, 1777) – Common prawn

Somerset (Stebbing 1906). Taken by Bassindale

(1941, 1943c) [as *Leander*] at Porlock, Stolford and Weston. Females in berry taken in the Stolford nets in May, June and July, but not in August. Bamber and Henderson (1994) consider that there is a small resident population throughout the year off Hinkley Point; berried females found principally in spring. A seasonal peak in numbers in late summer/early autumn signals the arrival of juveniles. From their rapid disappearance at the onset of winter, they conclude that the majority move into deeper water, never to return.

Commoner latterly, the highest number taken in a one hour sample during 1997 (Oct.) was 403 individuals, in 1998 (Sep.) was 700 whilst in 2000 (Jun.) the figure reached 1,195 (Henderson and Seaby 2001). This is the common large prawn of the Somerset coast; often seen at Porlock and occasionally from Minehead to Hinkley Point. Adults are generally commoner in summer.

Palaemonetes varians (Leach, 1814) – Ditch prawn
Sometimes common in the salt-marsh at Porlock Weir and abundant in rhynes at Brean.

Family ALPHEIDAE Rafinesque, 1815

Athanas nitescens (Leach, 1813)

Immature animals are regularly collected at Porlock and frequently in Greenaleigh Bay. Adults from there 8.2.74 and 7.10.83.

Alpheus macrocheles (Hailstone, 1835)

One from Porlock Bay (Bassindale 1943c).

Family HIPPOLYTIDAE Spence Bate, 1888

Eualus pusiolus (Krøyer, 1841)

A female in berry at Porlock, First Rocks (Bassindale 1943c) [as *Spirontocaris*]. More recently, common in lower shore pools from Porlock to Greenaleigh Bay; occasionally east to Blue Anchor, and a few seen at Watchet, Sep. 1984. Females in berry at Blue Anchor, 19.2.84. A single specimen in the plankton at Hinkley Point in Aug. 1982 (Henderson *et al.* 1984).

Hippolyte varians Leach, 1814

Common in lower shore pools from Porlock to Minehead.

Thoralus cranchii (Leach, 1817)

Three from Porlock, First Rocks (Bassindale 1943c) [as *Spirontocaris*].

Family PROCESSIDAE Ortmann, 1896

Processa canaliculata Leach, 1815

One in nets at Stolford, 11.10.39 (Bassindale 1941). Two specimens on the screens at Hinkley Point, Nov. 1980 (Henderson *et al.* 1984).

Processa edulis (Risso, 1816)

Single records from Porlock, Gore Point: 27.2.71 (adult female), 8.9.83 and 19.2.84. A single specimen on the screens at Hinkley Point in Apr. 1984 (Henderson *et al.* 1984).

Family PANDALIDAE Haworth, 1825

Pandalina brevisrostris (Rathke, 1843)

A single specimen on the screens at Hinkley Point, Nov. 1981 (Henderson *et al.* 1984).

Pandalus montagui Leach, 1814 – Aesop prawn

Rare in nets at Stolford, 18.8.39; common, 13.9.39; and abundant 11.10.39 (Bassindale 1941). Common in nets at Weston, 17.12.38 (Bassindale 1941). Late 1960s-1990s, common at times on Gore Point and in Greenaleigh and Blue Anchor Bays. Its annual abundance on the screens at Hinkley Point has remained almost constant, 1981-2001 (Langston *et al.* 2003), being commonest between May and November but absent or very rare in winter; peak numbers at around low tide (Henderson *et al.* 1984; Bamber and Henderson 1994).

Family CRANGONIDAE Haworth, 1825

Crangon allmanni Kinahan, 1860

Watchet, Helwell Bay; abundant in the inshore plankton at night (but not taken by day), 10.6.84. Collected at low tide from shallow runnels and upper shore pools. Henderson *et al.* (1984) and Bamber and Henderson (1994) recorded this species on the screens at Hinkley Point from November to early January, almost all females in their first year of life.

Crangon crangon (Linnaeus, 1758) – Common shrimp

Lloyd and Yonge (1947) [as *C. vulgaris*] and Henderson and Holmes (1987) describe the biology of this species in the Estuary. Matthews (1934), Davies (1936) and Bassindale (1941) [the last as *C. vulgaris*] describe the commercial fisheries which used to exist at Stolford and further upstream.

Along the coasts of Somerset (Stebbing 1906). *C. crangon* is now generally distributed all along the coast from Minehead to Sand Point, being regularly found in drainage channels at Blue Anchor and on all the 'long beaches' between Steart and Sand Bay (Boyden and Little 1973). This was the most numerous animal caught, throughout the year, on the screens at Hinkley Point, 1980-1984 (Henderson *et al.* 1984), and remained so for the next twenty years,

the population remaining remarkably stable (Henderson and Seaby 2001). Bridgwater Bay still supports a small intertidal commercial fishery (Walmsley and Pawson 2007), while 'shrimping' with hand nets continues to be actively pursued at low tide in Blue Anchor Bay.

Philocheirus fasciatus (Risso, 1816)

Several in Greenaleigh Bay, 27.8.76.

Sub-Order MACRURA REPTANTIA Bouvier, 1917

Infra-Order ASTACIDEA Latreille, 1802

Family NEPHROPIDAE Dana, 1852

Homarus gammarus (Linnaeus, 1758) – Lobster

Individuals are occasionally found on the shore at Porlock; for example, one 'of edible size', though minus both chelae, Jul. 1976, and a little one with both antennae broken off, 18.2.84. Local report has it that a 7lb specimen was taken by rod and line from Hurlstone Point and that lobsters can be found under the base of the old pier at Minehead. A 30 cm specimen was found at Kilve, 27.10.73, and they are reported occasionally on the screens at Hinkley Point, though not by Henderson *et al.* (1984).

Infra-Order THALASSINIDEA Latreille, 1831

Family AXIIDAE Huxley, 1879

Axius stirynchus Leach, 1815

Adults and juveniles are irregularly found under boulders at Porlock, throughout the year. Single records only from Hurlstone Point, Greenaleigh Bay, 7.10.83, and on the screens at Hinkley Point, Aug. 1981 (Henderson *et al.* 1984). Another there in 2001 (Langston *et al.* 2003).

Family CALLIANASSIDAE Dana, 1852

Callianassa subterranea (Montagu, 1808)

A single specimen taken by Dr P. S. Rainbow from the screens at Hinkley Point, 18.4.84.

Infra-Order ANOMURA MacLeay, 1838

Family MUNIDIDAE Ahyong, Baba, Macpherson and Poore, 2010

Squat lobsters

Munida rugosa (Fabricius, 1775)

A recently-dead specimen found on the shore at Gore Point, Porlock, 27.9.85.

Family GALATHEIDAE Samouelle, 1819

Galathea nexa Embleton, 1834

Occasional at Porlock, although several found on Gore Point in spring 1988, and in Greenaleigh Bay. One record from Brean Down in Apr. 1974.

Galathea squamifera Leach, 1814

Matthews (1924) found it common at the end of Brean Down at low tide. Bassindale (1943c) found two at Porlock. More recently, this was the commonest species of squat lobster, regularly found and very common on Gore Point, e.g. 29.8.96, east to Blue Anchor, and we have records from Watchet, 1.11.86, 2.3.87 (several) and 19.9.97 (a large one), Kilve, 30.3.87, and Weston, 11.1.74.

Galathea strigosa (Linnaeus, 1761)

Both adults and immatures are occasionally recorded from Porlock (e.g. 3.11.86, 1.3.87, 18.9.97) and Greenaleigh Bays. Less common further east – a single record from Minehead, an adult male and female at Blue Anchor, 19.2.84, and a single record from Brean Down.

Family PORCELLANIDAE Haworth, 1825

Porcelain crabs

Porcellana platycheles (Pennant, 1777) – Broad-clawed porcelain crab

Bassindale (1943c) recorded the species as rare at First Rocks and for a time (1968-84) it was less common than *Pisidia longicornis*, but later (1990-2001) the balance of power was reversed. It is usually found from Glenthorne (illustrated by Phillips (2011, p. 32)) to Gore Point and across the Bay to Hurlstone Point. Sporadic records east to Minehead.

Pisidia longicornis (Linnaeus, 1767) – Long-clawed porcelain crab

Bassindale (1943c) [as *Porcellana*] found it abundant at Porlock, First Rocks. More recently, it was abundant at Porlock and common east to Minehead. We did not see it between Blue Anchor and Hinkley Point but the species was common at the end of Brean Down, 13.9.73, and we have a single record from Sand Point, 18.12.73.

Family PAGURIDAE Latreille, 1802

Hermit crabs

Anapagurus hyndmanni (Bell, 1845)

Regularly found on the lower shore at Porlock, where it is the second commonest hermit crab. Several found in Greenaleigh Bay, 7.10.83. Single records from Minehead, 16.3.68, and Watchet, Apr. 1981.

Anapagurus laevis (Bell, 1845)

A single specimen from western side of Gore Point at extreme low water, 29.8.96.

Pagurus bernhardus (Linnaeus, 1758) – Common hermit crab

Recorded from Porlock, Blue Anchor, Kilve and Weston (Bassindale 1941, 1943c) [as *Eupagurus*] and from Brean Down by Matthews (1924). This is by far the commonest Hermit crab in the area; always abundant at Glenthorne (illustrated by Phillips (2011, p. 32)), Porlock, Blue Anchor, Watchet and Hinkley Point (although not close to the outfall river) – and inevitably seen on the intervening shores. Frequent on the screens at Hinkley Point 1980-1984 (Henderson *et al.* 1984) and in subsequent years. Abundant on Brean Down spit and frequent on Steephholm spit, 12.8.95.

Pagurus cuanensis Bell, 1845

Porlock, Gore Point. Before the hot summers of 1975/76 several individuals were found whenever we searched for them, although it was necessary to examine a large number of small hermits to find any at all. Not seen between 1976 and March 1986 when one large adult was found at Gore Point; not seen since then, and not found on any other shores.

Family DIOGENIDAE Ortmann, 1892

Diogenes pugilator (Roux, 1829)

A glaucothoe larva was caught in a plankton net in Watchet Harbour, 13.9.83. Adults have not yet been recorded on the shore east of Ilfracombe.

Sub-Order BRACHYURA Latreille, 1803

True crabs

Family LEUCOSIIDAE Samouelle, 1819

Ebalia tuberosa (Pennant, 1777)

Single females at Gore Point, 25.2.71, 27.2.71 and 1.3.98, the last of these in the gravelly area below the largest weir.

Family CORYSTIDAE Samouelle, 1819

Corystes cassivelaunus (Pennant, 1777) – Masked crab

Sporadic records of juveniles on Selworthy Sands, (several, 10.8.79) and in Greenaleigh Bay (two, 9.9.83). One record of an adult: a berried female from Greenaleigh Bay, 7.10.83. A single megalopa caught at Hinkley Point 1980-1984 (Henderson *et al.* 1984).

Family CANCRIDAE Latreille, 1803

Cancer pagurus Linnaeus, 1758 – Edible crab

Bassindale (1941, 1943c) found occasional small crabs from Porlock to Weston. Young crabs, up to

about 80 mm across the carapace, are abundant at Porlock and regularly seen on all shores east to St Audries, including Hurlstone Point. They are caught on the screens at Hinkley Point, in increasing numbers at the turn of the century (Henderson and Seaby 2001).

Family GONEPLACIDAE MacLeay, 1836

Goneplax rhomboides (Linnaeus, 1758) – Angular crab

Occasionally found at extreme low water mark, Blue Anchor. A male and a female found separately, 18.3.69, and an immature, 17.4.69.

Family PILUMNIDAE Samouelle, 1819

Pilumnus hirtellus (Linnaeus, 1761) – Hairy crab

Only recorded by Bassindale (1943c) at Porlock (and then as rare). More recently, widely distributed and usually common at Porlock, both on Gore Point (berried female, 18.9.97) and in the Bay, and in Greenaleigh Bay. Occasional at Minehead, Blue Anchor and Watchet (where there was a berried female, 8.9.83). Single records from Black Rock (St Audries), 16.10.85, Brean Down, 13.9.73, and Sand Point, 18.12.72.

Family XANTHIDAE MacLeay, 1838

Xantho pilipes Milne Edwards, 1867

Recorded as abundant at Porlock by Bassindale (1943c) [as *X. hydrophilus*]. It was regularly found, 1968-76, on Gore Point and in the Bay but was certainly not abundant. It became commoner on Gore Point thereafter, especially from 1983, and was often the commonest crab at extreme low water. Present in Greenaleigh Bay but not seen further east.

Family POLYBIDAE Ortmann, 1893

Swimming crabs

Liocarcinus holsatus (Fabricius, 1798)

Caught in shrimp nets or kypes – several minute specimens at Kilve, 21.5.39, rare at Stolford, 18.8.39, 3.5.40 and 5.6.40, and taken throughout the year at Weston (Bassindale 1941) [as *Portunus*]. Young crabs were recorded on the shore in Greenaleigh Bay, Sep. 1983. A dead adult – not sacculinised – was found in the freshwater stream at Gore Point (Porlock) in Apr. 1986. Either this species or *L. pusillus* was frequent on the screens at Hinkley Point 1980-1984 (Henderson *et al.* 1984); I have found adults of this species (but not of *Liocarcinus pusillus*) on the screens, e.g. 13.4.73, 6.8.74, and 18.4.84 when,

in a sample of 32 crabs, 56% were sacculinised. Sex ratio amongst the crabs was 13 male to 19 female. Many sacculinised crabs again taken, Apr. 1985 and 1988 – but only three, 15.6.84, and none amongst the six crabs collected, 28.9.85. Relatively abundant, 2001-2 (Langston *et al.* 2003). Netted at high tide (Bremner *et al.* 2011).

Liocarcinus marmoreus (Leach, 1814) – Marbled swimming crab

Recorded by Bassindale (1941) [as *Portunus*] in shrimp nets at Stolford: one, 20.6.39; a few, Jul. and Nov. 1939, and one, 8.5.40. Recorded as “common” on the screens at Hinkley Point 1980-1984 by Henderson *et al.* (1984); one taken there, 18.4.88, with many *L. holsatus*. Not mentioned by Langston *et al.* (2003).

Liocarcinus navigator (Herbst, 1794) – Arcuate swimming crab

A single record of a young crab at Porlock (Gore Point), 8.9.83.

Necora puber (Linnaeus, 1767) – Velvet swimming crab

Adults are common on Gore Point and in Porlock Bay in summer and young crabs may be found there throughout the year. Found in decreasing numbers east to Minehead, and once at Blue Ben near Kilve. Occasionally taken on the screens at Hinkley Point Power Station, e.g. 18.4.88. Taken “more frequently” there in 2001-2 (Langston *et al.* 2003). Megalopa larvae identified from the Watchet plankton, 13.9.83. [Recorded as *Portunus* in Bassindale’s papers, and as *Macropipus* in Boyden *et al.* (1977); illustrated from Glenthorne by Phillips (2011, p. 32).]

Polybius henslowii Leach, 1820 – Sardine crab

Rare on the screens at Hinkley Point during Oct. 1983 (Henderson *et al.* 1984). An adult male caught at Hinkley Point, 18.4.84. Seven individuals taken in 2001 but rarely recorded in the following years (Langston *et al.* 2003).

Family PORTUNIDAE Rafinesque, 1815

Carcinus maenas (Linnaeus, 1758) – Shore crab

Seemingly ubiquitous, save on the most exposed headlands (and even on Hurlstone Point they are occasionally stranded in pools, e.g. 28.6.84). Particularly common under stones at the edge of the outfall river at Hinkley Point (a high proportion of young ones brightly coloured and/or with white patches, 8.9.87) and in the *Corallina* run-off channels, 1992 (Bamber and Irving 1993). Frequently caught on the screens at Hinkley Point 1980-1984 (Henderson *et al.*

1984). Illustrated by Phillips (2011, p.19). A pair *in coitu* at Watchet, 8.7.86. Females in berry common, February to April and occasionally also in August. Young crabs abundant in Porlock Bay Lagoon, 29.6.99. Megalopa larvae identified in the Watchet plankton in June and August (e.g. 15.8.97), very common 19.8.85 with a few zoea larvae, and occasionally in September – the latest record being 28.9.84. Very young crabs evident at Watchet, 8.7.86.

Portumnus latipes (Pennant, 1777)

Regularly found buried in the sand around pools near the top of the sandy beach in Greenaleigh Bay during August, September and October. A single record from Minehead, 9.9.68.

Family MAJIDAE Samouelle, 1819

Spider crabs

Eurynome aspera (Pennant, 1777)

One from Porlock, Gore Point, 3.4.69.

Eurynome spinosa Hailstone, 1835

One from Porlock, Gore Point, 18.3.84.

Maja brachydactyla Balss, 1922 – Spiny spider crab

There are no records of living crabs on the shore but recently-cast skeletons are occasionally washed up between Gore Point and Watchet in summer and local fishermen report these crabs common off Blue Anchor in summer.

Family OREGONIIDAE Garth, 1958

Spider crabs

Hyas coarctatus Leach, 1816

One from Porlock (Gore Point) at low water springs, 17.2.84.

Family INACHIDAE MacLeay, 1838

Spider crabs

Inachus leptochirus Leach, 1817

One post-pubertal male from Porlock (Gore Point), 11.4.68, and an immature, 27.2.71.

Inachus phalangium (Fabricius, 1775)

Two isolated specimens from Porlock (Gore Point) 18.3.84 and 1.3.87; the former bearing a parasitic barnacle – probably *Drepanorchis neglecta*.

Macropodia rostrata Linnaeus, 1761

One pre-pubertal male from Gore Point, 27.2.71. Frequently caught on the screens at Hinkley Point, 1980-1984, (Henderson *et al.* 1984). Young *Macropodia*, from Gore Point, 27.9.84; in Greenaleigh Bay, 9.9.83, 7.10.83; amongst *Tubularia* (and actively swimming in the lab)

at Watchet 19.9.97; and from Black Rock (St Audries), 16.10.85.

Sub-Phylum CHELICERATA Heymons, 1901

Class PYCNOGONIDA Latreille, 1810

Sea spiders

Order PANTOPODA Gerstäcker, 1863

Family AMMOTHEIDAE Dohrn, 1881

Achelia echinata Hodge, 1864

Occasionally collected on algae at Porlock, 9.2.74, 17.3.76; Hurlstone Point, 25.9.84, and once at Minehead (Madbrain Sands), 28.8.73

Family NYMPHONIDAE Wilson, 1878

Nymphon brevirostre Hodge, 1863

Single records from Porlock (Gore Point), 28.8.76, and Greenaleigh Bay, 9.9.83 and 7.10.83. One in the plankton at Hinkley Point, Aug. 1983 (Henderson *et al.* 1984).

Nymphon gracile Leach, 1814

Single records from Porlock, 9.2.74, and Kilve, 7.2.74.

Family CALLIPALLENIDAE Hilton, 1942

Callipallene brevirostris (Johnston, 1837)

One in the plankton at Hinkley Point, Feb. 1984 (Henderson *et al.* 1984).

Family PHOXICHILIDIIDAE Sars, 1891

Anoplodactylus pygmaeus (Hodge, 1864)

Single individuals recorded from one of the *Corallina* run-off channels on Hinkley Point, 9.9.91 and 18.3.92 (Bamber and Irving 1993). Listed in the *Corallina* cryptofaunal community by Bremner *et al.* (2011).

Phoxichilidium femoratum (Rathke, 1799)

In the *Corallina* cryptofaunal community on Hinkley Point (Bremner *et al.* 2011).

Family ENDEIDAE Norman, 1908

Endeis spinosa (Montagu, 1808)

Collected at Porlock (Gore Point), 8.9.83.

Family PYCNOGONIDAE Wilson, 1878

Pycnogonum litorale (Ström, 1762)

One at Porlock and two on *Tubularia* at Blue Anchor (Bassindale 1941, 1943c). We have just a single record from Greenaleigh Bay, 20.8.74, whilst Bamber and Coughlan (1987) list it on anemones at Hinkley Point.

Class ARACHNIDA Cuvier, 1812

Order ACARINA

Mites

Mites have been little studied but are certainly abundant on open rock surfaces, in crevices, on hydroids, amongst strand-line litter and in salt-marsh pools. They extend from the open coasts at least as far up the estuary as Arlingham.

Sub-Phylum MYRIAPODA

Class CHILOPODA

Centipedes

There is at least one intertidal species of centipede active in Somerset, and more inhabit the splash zone. The two species listed by Boyden *et al.* (1977) were from Portishead. *Strigamia maritima* (Leach, 1817) is found on sea shores from Cornwall to Shetland, but *Geophilus flavus* (De Geer, 1778) – listed as *Necrophloeophagus longicornis* – favours urban locations, see Barber (2009).

Sub-Phylum INSECTA

Class APTERYGOTA

Order ARCHAEOGNATHA

Bristletails

Family MACHILIDAE

Petrobius brevistylis Carpenter, 1913

Recorded by Bassindale (1941, 1943c) [as *P. carpenteri*] from Porlock shingle bank, Kilve and Weston. More recently, *Petrobius* was abundant from Porlock to Sand Point in cracks and crannies near high water mark; all those identified proved to be of this species.

Order COLLEMBOLA

Springtails

Family NEANURIDAE

Anurida maritima (Guérin-Méneville, 1836)

Probably present on all West Somerset shores, although especially notable at Hurlstone Point, Blue Anchor and Watchet. Present at Hinkley Point (Bremner *et al.* 2011) and on Steephelm (Crothers 1981).

Family ISOTOMIDAE

Archisotoma besselsi (Packard, 1877)

Common at Weston, over the middle shore, and abundant at Sand Point (Womersley 1924, 1925).

- Class PTERYGOTA** Brauer, 1885
 Order COLEOPTERA Linnaeus, 1758
- Beetles
- Family CARABIDAE Latreille, 1802
- Aepus marinus*** Stroem, 1788
 Blue Anchor, two under a middle-shore stone (Bassindale 1941); Doniford, 1866 (Duff 1993).
- Aepus robinii*** (Laboulbène, 1849)
 Blue Anchor, very local, in crevices and under rocks resting on gravel, Jul. 1967 (Duff 1993).
- Brosicus cephalotes*** (Linnaeus, 1758)
 Porlock Bay to Sand Bay under flotsam and jetsam on bare sand (Duff 1993).
- Cilleus laterale*** (Samouelle, 1819)
 Dunster Beach, Berrow and Sand Bay (Duff 1993).
- Dicheirotichus gustavi*** Crotch, 1871
 Local, from Porlock Weir to the Avon Gorge, in saltmarshes, on estuary banks and damp clayish sea shores (Duff 1993).
- Nebria brevicollis*** (Fabricius, 1792)
 Burnham (Blathwayt 1906). It is not clear whether any of the records in Duff (1993) refer to intertidal habitats.
- Nebria complanata*** Linnaeus, 1767 – Beachcomber beetle
 Burnham (Blathwayt 1906). Berrow to Sand Bay (Duff 1993).
- Family STAPHYLINIDAE Latreille, 1804
- Bledius diota*** Schiödte, 1866
 Berrow, May 1978 (Duff 1993).
- Bledius spectabilis*** Kraatz, 1857
 Sand Bay, 1985-86 and 1990 (Duff 1993).
- Bledius subniger*** Schneider, 1898
 Berrow and Sand Bay (Duff 1993).
- Diplota submarina*** (Fairemaire and Laboulbène, 1854)
 Minehead, May 1947 and 1948; Burnham, Apr. 1945 (Duff 1993).
- Micralymma marinum*** (Ström, 1783)
 Minehead, Aug. 1935 (Duff 1993).
- Family HETEROCERIDAE
- Heterocerus maritimus*** Guérin-Méneville, 1838
 Very local in salt-marshes from Combwich to Sand Bay (Duff 1993).
- Order DIPTERA
- Flies
- Family COELOPIDAE Hendel, 1910
- Seaweed flies
- Coelopa frigida*** (Fabricius 1805)
 Minehead (Blathwayt 1906). Probably breeding in dried fucoids wherever these form drift lines along the beaches above high water of neap tides.
- PHYLUM MOLLUSCA** Linnaeus, 1758
- Class POLYPLACOPHORA** Gray, 1821
 Sub-Class NEOLORICATA Bergenhayn, 1955
- Chitons
- Order LEPIDOPLEURIDA Thiele, 1909
 Family LEPTOCHITONIDAE Dall, 1889
- Leptochiton asellus*** (Gmelin, 1791)
 One at Porlock, First Rocks (Bassindale 1943c) [as *Leptopleurus*]. Several found more recently at Porlock; a single record from Blue Anchor, but regularly found on the lower shore at Watchet (Helwell Bay) – particularly noticeable in late March 1990. Present on Steephholm (Gillard 2001).
- Order CHITONIDA Thiele, 1909
 Family ISCHNOCHITONIDAE Iredale, 1914
- Lepidochitona cinerea*** (Linnaeus, 1767)
 The only chiton widely-distributed over most of the Estuary. In 1939-40 it was found at Porlock, was common at Blue Anchor, Kilve, Stolford and Steephholm, and was occasional at Weston (Bassindale 1941) [as *L. cinereus*]. More recently, it was common from Porlock to Brean Down, being especially abundant around Watchet and close to the effluent river at Hinkley Point. Present on Steephholm (Crothers 1981).
- Tonicella marmorea*** (Fabricius, 1780)
 One from Porlock, Gore Point, 25.2.71.
- Tonicella rubra*** (Linnaeus, 1767)
 One from Porlock, First Rocks (Bassindale, 1943c). Several from that area more recently, and at Gore Point, 8.2.89, 17.8.89.
- Family ACANTHOCHITONIDAE Pilsbry, 1893
- Acanthochitona crinita*** (Pennant, 1777)
 In lower-shore *Corallina* pools at Porlock and Minehead. Seen in upper-shore *Corallina* pools at Gore Point 17.2.84, 17.8.89. A Minehead specimen is illustrated by Phillips (2014). One found in a *Corallina* run-off on Hinkley Point, 22.11.91 (Bamber and Irving 1993) [as *A. crinitus*].

Class GASTROPODA Cuvier, 1798

Slugs and snails

Sub-Class VETIGASTROPODA Salvini-Plawen, 1980

Order FISSURELLOIDA Fleming, 1822

Family FISSURELLIDAE Fleming, 1822

Emarginula fissura (Linnaeus, 1758) – Slit limpet
Abundant and large at Porlock, First Rocks and Gore Point (Bassindale 1943c) [as *E. reticulata*]. More recently, common on the lower shore at Porlock, Greenaleigh Bay and Minehead (Madbrain Sands). It is occasionally seen at Blue Anchor and we have single records from Watchet, 2.3.87, and Kilve, 20.10.72. Recorded on Steephholm by Gillard (2001). Empty shells are found upstream to Weston.

Diodora graeca (Linnaeus, 1758) – Key-hole Limpet

Bassindale (1943c) [as *D. apertura*] recorded it as rare at Porlock. We have regularly found isolated individuals from Porlock (e.g. several on Gore Point, 17.2.84) to Greenaleigh Bay.

Family PHASIANELLIDAE Swainson, 1840

Tricolia pullus (Linnaeus, 1758) – Pheasant shell
Common at Porlock, First Rocks (Bassindale 1943c). Certainly most abundant at Porlock in recent years, but often seen at Hurlstone Point and in Greenaleigh Bay, whilst several have been found at Minehead (Madbrain Sands). Occasional at Blue Anchor, Watchet (very young ones frequent in autumn 1985 and spring 1987) and Kilve.

Order TROCHOIDEA Rafinesque, 1815

Family TROCHIDAE Rafinesque, 1815

Top-shells

Phorcus lineatus (da Costa, 1778) – Common top-shell

Abundant at Porlock (Bassindale 1943c) [as *Osilinus lineatus*] but Bassindale (1941) did not record it anywhere else. It is still abundant on Gore Point, but somewhat stunted in growth; usually commoner, larger and older in the area of the freshwater stream. Much less common in Porlock Bay. Generally sparse on Hurlstone Point (absent from the tip); present on Greenaleigh Point, common in Aug. 1990, where they live to a greater age and reach a greater size than on Gore Point although some cohorts are rare or absent. Not noticed at Minehead (Warren Point) in 1974 but locally common there, Jun. 1995 and 2000-2002.

The cold winters of 1995-96 and 1996-97 appeared to eliminate this species from all sites east of Minehead, but recolonisation has been successful subsequently. Present at Blue Anchor in 1974 (Crothers 1976) [as *Monodonta*], none seen in June 1990 but the enclave was well-established, once more, in 2001. At Watchet, its abundance steadily increased during the period 1968 (not seen) to 1987 (occasional over the upper middle shore). The population briefly declined but was again occasional in 1995, with young juveniles as well as large ones present in October. None could be found in 1998 and only one in June 1999, but by the autumn of 2001 it was again possible to measure monthly samples of 100 and the species was even commoner across Helwell Bay, with a much higher proportion of younger age-classes. A local population on Swill Point, Doniford (east end of Helwell Bay), first noted in 1990, flourished for a while but no survivors could be found in 1998. The 1999, 2000 and 2001 cohorts settled successfully.

First recorded at East Quantoxhead and Kilve, Sep. 2001, and settlement was locally heavy in 2001; less so in 2002. Lilstock was searched without success 2001, but a few individuals were found there, Sep. 2002. Bamber and Coughlan (1987) list it from Hinkley Point; I did not notice it there until June 2003, when frequent in pools west of the effluent river. South side of Brean Down searched, without success, 28.6.03.

Gibbula cineraria (Linnaeus, 1758) – Grey top-shell

Abundant at Porlock and common at Blue Anchor (Bassindale 1941, 1943c). More recently, it was commonest at Porlock, decreasing in numbers and range east to Watchet where it was confined to extreme low water mark.

Gibbula tumida (Montagu, 1803)

A single specimen collected with many *G. cineraria* at Porlock (Gore Point), 27.2.71.

Gibbula umbilicalis (da Costa, 1778) – Purple top-shell

Abundant at Porlock, a few at Blue Anchor but not at Kilve (Bassindale 1941, 1943c). In the ensuing years it has spread east and increased in numbers. Boyden *et al.* (1977) recorded it east to Kilve with a single individual at Hinkley Point in 1972. Now generally distributed on all rocky shores between Porlock and Lilstock, being abundant west of Dunster Beach, common west of Kilve and occasional at Lilstock. At Hinkley Point, two were seen beside the effluent river, 8.9.87.

Bamber and Coughlan (1987) record it from the same place at a maximum density of 2 per square metre. Martin (1994) found it to average 4 per square metre over a much larger area. Could only be described as abundant in June 2003. South side of Brean Down, searched without success, 28.6.2003. Numbers were greatly reduced east of Minehead after the 1996-97 winter but the 1998 settlement was particularly successful and recovery appeared complete in autumn 2002.

Calliostoma granulatum (Born, 1778)

One juvenile, ca 10 mm. at Gore Point, extreme low water mark of spring tides, 29.8.96. Three pairs of epipodial tentacles; cream, and with a deep umbilicus.

Calliostoma zizyphinum (Linnaeus, 1758) – Painted top-shell

Fairly common at Porlock (Bassindale 1943c). More recently, common or abundant in the *Laminaria* zone at Porlock (Gore Point and in the Bay) and particularly abundant at low water springs on the west side of Hurlstone Point. Common in Greenaleigh Bay and frequent at Minehead, Madbrain Sands, but not seen east of this site. Both white and coloured individuals occur wherever the species is found. Illustrated by Phillips (2011, p. 28).

Sub-Class PATELOGASTROPODA Lindberg, 1986

Order PATELLOIDEA Rafinesque, 1815

Limpets

Family LOTTIIDAE Gray, 1840

Tectura testudinalis (O. F. Müller, 1776) – Tortoiseshell limpet

A single individual found on the lower shore at Porlock, Gore Point, 9.8.79.

Tectura virginea (O. F. Müller, 1776) – White tortoiseshell limpet

Common and large at Porlock, First Rocks (Bassindale 1943c) [as *Patelloida*]. No longer common, but usually found at low water springs on Gore Point. One (inadvertently) collected on stones at Watchet in 1983.

Family PATELLIDAE Rafinesque, 1815

Patella depressa Pennant, 1777 – Black-footed limpet

Although Fretter and Graham (1976) state that this species is absent from the Bristol Channel, east of Lynmouth, limpets showing characteristics of the species are common on Hurlstone Point and individuals are found east to Watchet.

Patella pellucida (Linnaeus, 1758) – Blue-rayed limpet

Abundant and large at Porlock (Bassindale 1943c) [as *Patina pellucida*]. Still common or abundant on *Laminaria* at Porlock, especially on Gore Point, and occasionally found on *Fucus serratus* as well.

Patella ulyssiponensis Gmelin, 1791 – China limpet

Common to abundant on the extreme lower shore at Porlock, Gore Point, and at Hurlstone Point, where they extend upshore in pools. Recorded by Bamber and Coughlan (1987) from Hinkley Point.

Patella vulgata Linnaeus, 1758 – Common limpet

Recorded by Bassindale (1941, 1943c) as common at Porlock and from Blue Anchor to Sand Point, including Steepholm. It is now common or abundant on rocky shores along the whole coast. Numbers are adversely affected by both hot summers (at Watchet, especially, showing signs of heat exhaustion, Jul. 1983) and cold winters, particularly 1978. Young animals common in the effluent river at Hinkley Point, Sep. 1987. Illustrated by Phillips (2011, p. 28). Use of the species to assess heavy metal contamination is detailed by Butterworth *et al.* (1972) and by Peden *et al.* (1973).

Sub-Class CAENOGASTROPODA Cox, 1960

Order LITTORINIMORPHA Golikov and Starobogatov, 1975

Family LITTORINIDAE Children, 1834

Chink-shells and Winkles

Lacuna crassior (Montagu, 1803) – Rough chink-shell

Occasional to frequent on the lower shore at Porlock, Greenaleigh Bay and at Watchet (Helwell Bay), where several found, Oct. 1988. Empty shell at Kilve, Sep. 2000.

Lacuna pallidula (da Costa, 1778) – Pale chink-shell

On red algae and *Fucus serratus* from the lower middle shore at Porlock, east to Kilve. Particularly common in Sep. 1976 and 2000. Present on Steepholm (Crothers 1981).

Lacuna parva (da Costa, 1778) – Little chink-shell

Occasional on the lower shore at Porlock (Gore Point), 16.10.74, 6.10.83, 18.2.84 and 25.10.84.

Lacuna vineta (Montagu, 1803)

Occasional on the lower shore at Porlock (Gore Point), 27.2.75, 9.8.79 and 6.10.83.

Littorina arcana Hannaford Ellis, 1978 – Oviparous rough wrinkle

Recorded only from Hurlstone Point, although searched for elsewhere. The shell aperture is larger and more elongated than that of the local *L. saxatilis* and the surface appreciably smoother.

Littorina compressa Jeffreys, 1865

The self-coloured (ie. uniformly coloured) form was reported from the west side of Hurlstone Point by Dr R. G. Crump in 1977, but was not recorded subsequently.

Littorina fabalis (Turton 1825) – Annual flat wrinkle

On the lower shore at Gore Point, Hurlstone Point, Greenaleigh Bay, Warren Point, Watchet, St Audries Bay and Kilve. Extends up-channel to Sand Point including Steepholm. Note: the older records do not distinguish between this species and *L. obtusata*, lumping both together as *L. littoralis*, but *L. fabalis* is the lower-middle-shore flat wrinkle (Williams 1994).

Littorina littorea Linnaeus, 1758 – Edible wrinkle

Common at Porlock, Blue Anchor and Kilve; frequent at Weston; sparse on Steepholm (Yonge and Lloyd 1939) but absent elsewhere (Bassindale 1941, 1943c). Widely distributed in recent years from Porlock to Sand Point, including Steepholm. Only really abundant on Gore Point (Porlock), where they achieved more than 100% cover in some places during 1987. The population on Hurlstone Point is usually dominated by young wrinkles in their first year, that on Gore Point by animals showing two or three growth checks, whilst the (much smaller) population at Watchet was often dominated by large, apparently older, individuals (Crothers 1992); much commoner by 2003. First recorded in Porlock Bay lagoon 29.6.99 – a single individual c.20mm. Frequent on Steepholm, 12.8.95, with a range of sizes present. Hinkley Point (Bremner *et al.* 2011). Veliger larvae are a feature of Watchet Harbour plankton during the summer; abundant, 28.7.80. Butterworth *et al.* (1972) report on heavy metal levels in this species.

Littorina obtusata Linnaeus, 1758 – Flat wrinkle

Bassindale (1943c) [as *L. littoralis*] found only flat wrinkle spawn at Porlock but living wrinkles, probably of this species, common or abundant from Blue Anchor to Sand Point (Bassindale 1941). More recently, common to abundant in most years on all seaweed-covered shores from Porlock to Sand Point, including Steepholm. Numbers fluctuate in response to fucoid cover: severe mortality at Watchet followed the near

elimination of fucoids in 1977 after the hot summers of 1975-76, but they had returned to their former level by 1984. Numbers were low at Porlock (Gore Point) in 1986-87. Note: the older records do not distinguish between this species and *L. fabalis*, lumping both together as *L. littoralis*, but *L. obtusata* is the upper-middle-shore flat wrinkle (Williams 1994).

Littorina saxatilis (Olivi, 1792) – Viviparous rough wrinkle

Common or abundant at Porlock and from Blue Anchor to Aust, including Steepholm (Bassindale 1941, 1943c). More recently, common to very abundant on all rocky shores, including Steepholm where it extends over the whole intertidal zone. On Hurlstone Point, where it occurs with *L. arcana*, the shell of this species is notably ridged.

Melarhaphé neritoides (Linnaeus, 1758) – Little wrinkle

Minehead, and between Burnham and Brean (Swanton 1912) [as *Littorina*]. Not recorded by Bassindale. Common now at Porlock (First Rocks) and on the west side of Hurlstone Point. Regularly found at Greenaleigh and on Minehead Harbour Wall. Sparse at Blue Anchor and Watchet (West Beach). The eastern limit in 1975 was the east mole of Watchet Harbour but this has been re-faced with concrete since then. Hinkley Point, recorded as rare by Bamber and Coughlan (1987) but not seen there by anybody else.

Family HYDROBIIDAE Stimpson, 1865

Peringia ulvae (Pennant, 1777) – Mud snail

Rare at Kilve, common at Weston (Bassindale 1941) [as *Hydrobia*]. More recently, the species may be common or very abundant on all the mud flats from Blue Anchor to Sand Point. First seen in Porlock Bay Lagoon 29.6.99, when locally common except in the area of the main channel. Occurrence and abundance very erratic at all localities. Maximum recorded density is around 10,000 per square metre on Brean Flats and at Weston, see Boyden and Little (1973), Little and Boyden (1976), Little and Nix (1976). With *Hediste diversicolor* and *Macoma balthica*, it more or less dominates the large area of littoral sandy mud from Stert Flats to Brean Down, these three species accounting for 85% of the biomass (Bremner *et al.* 2011).

Family TATEIDAE Thiele, 1925

Potamopyrgus antipodarum (Gray, 1843)

Not recorded in the estuary itself, but very

common in some of the streams running into it – e.g. Kilve (Bassindale 1941) [as *Potamopyrgus jenkinsi*]. Common now in Kilve pill.

Family IRAVADIIDAE Thiele, 1928

Ceratia proxima (Forbes and Hanley, 1850)
Several from Porlock Bay, 8.10.83.

Family RISSOIDAE Gray, 1847

Crisilla semistriata (Montagu, 1808)
Bassindale (1943c) [as *Cingula*] found two at Porlock. More recently, common or abundant in suitable substrates from Porlock to Blue Anchor, but not on Hurlstone Point.

Manzonina crassa (Kanmacher, 1798)
Single records from Porlock, 25.8.72, 15.9.73, 27.2.75, and from Minehead (Madbrain Sands), 28.8.73 (Boyden *et al.* 1977) [as *Alvania*].

Obtusella intersecta (Wood, 1856)
At densities of 920 per square metre in ‘liquid mud’ at Hinkley Point (Bamber and Coughlan 1987) [as *Putilla alderi*].

Onoba semicostata (Montagu, 1803)
Bassindale (1943c) [as *Cingula*] found two at Porlock. More recently, occasional at Porlock, Greenaleigh Bay, Blue Anchor and Watchet. Locally common at Kilve. Occasional in *Corallina* run-offs on Hinkley Point (Bamber and Irving 1993) and a single record from Brean Down (Boyden *et al.* 1977).

Rissoa parva (da Costa, 1779)
Bassindale (1943c) found two at Porlock. More recently, locally common (in some years, e.g. 1996) on Gore Point and in Porlock Bay, with individuals found east to Blue Anchor.

Family BARLEEIDAE Gray, 1857

Barleeia unifasciata (Montagu, 1803)
Several from red algae epiphytic on *Laminaria* at Porlock, 30.8.73.

Family TORNIDAE Sacco, 1896

Circulus striatus (Philipi, 1836)
Listed from *Corallina* cryptofaunal patch on Hinkley Point by Bremner *et al.* (2011). If confirmed, this may be the first British – and intertidal – record of a living individual of this very rare, tiny (2.75 mm) sublittoral snail at the northern limit of its geographical range.

Tornus subcarinatus (Montagu, 1803)
A single snail from a mid-shore *Corallina* pool at Porlock, 30.8.73; and several from rapids

draining pools on the lower middle shore at Minehead (Madbrain Sands), 28.8.73.

Family TRIVIIDAE Troschel, 1863

Cowries

Trivia arctica (Pulteney, 1799)
Porlock, Gore Point, occasionally found in small numbers.

Trivia monacha (da Costa, 1778)
Porlock, Gore Point, occasionally found in small numbers; the commoner of the two cowrie species

Family NATICIDAE Guilding, 1834

Euspira catena (da Costa, 1778)
The living animal has not been seen but a fresh shell, occupied by a hermit crab, was found in Porlock Bay, 8.10.83.

Unassigned to an Order

Family TRIPHORIDAE Gray, 1847

Marshallora adversa (Montagu, 1803)
A single individual collected with sponges from Porlock (Gore Point), 28.8.76 (Boyden *et al.* 1977) [as *Triphora perversa*].

Family EPITONIIDAE Berry, 1910

Epitonium clathrus (Linnaeus, 1758)
A damaged but living snail from Watchet (Helwell Bay), 21.2.74 (Boyden *et al.* 1977) [as *Clathrus clathrus*].

Order NEOGASTROPODA Wenz, 1938

Family MURICIDAE Rafinesque, 1815

Nucella lapillus (Linnaeus, 1758) – Common Dogwhelk

The shores of the Severn Estuary are inhabited by an unusually elongated form of *N. lapillus* (Crothers 1974), which merges with the normal form at the western edge of our area. Near the junction, exceptionally large individuals occur at extreme low water mark. Shells in excess of 40 mm height are commonplace and some on Gore Point exceed 55mm (see Crothers 1985). Abundant at Porlock, Blue Anchor, Kilve and Weston: fresh egg capsules, Mar. and Apr. 1939 and 1940 (Bassindale 1941, 1943c). Plentiful on Brean Down (Matthews 1924) [as *Purpura*].

In the late 1970s it was common or abundant on suitable shores to the west. Numbers notably decreased on Hurlstone Point between 1986 and 1989, whilst the large form was not found alive at

Porlock Weir in the 1990s. Several individuals in excess of 40 mm length were seen on Gore Point, 25.7.01. The species is progressively confined to the lower shore east of Minehead, only at extreme low water mark on Brean Down spit and Sand Point spit and reaching its upstream limit a little way beyond Sand Point; present on Steephholm. Egg capsules are generally laid from late February to late April, but fresh capsules have been found from February to October on Hurlstone Point and elsewhere.

Ocenebra erinaceus (Linnaeus, 1758) – Sting Winkle

Fairly common at Porlock and one at Blue Anchor (Bassindale 1941, 1943c) [as *O. erinacea*]. More recently, common (sometimes abundant) at Porlock and occasional at Hurlstone Point, Greenaleigh Bay and Watchet. Illustrated by Phillips (2011, p. 27).

Ocenebrina aciculata (Lamarck, 1822)

Single specimens from Porlock (Gore Point), Jul. 1973 and 8.2.89.

Family BUCCINIDAE Rafinesque, 1815

Buccinum undatum (Linnaeus, 1758) – Common Whelk

Single records from Porlock Bay and Weston (Bassindale 1941, 1943c); Steephholm (Yonge and Lloyd 1939) and Brean Down (Matthews 1924). Bassindale noted young whelks hatching from egg capsules at Blue Anchor, 23.4.40. More recently, empty shells were common from Porlock to Sand Point and adults were regularly found on the lowest tides between Porlock and Hinkley Point, especially at Watchet. Recorded from Steephholm (Crothers 1981; Gillard 2001). Young whelks, 20-40 mm in height, may be common at Blue Anchor, Watchet and Weston early in the year.

Nassarius incrassatus (Ström, 1768) – Thick-lipped Dog-whelk

Several at Porlock (First Rocks) (Bassindale 1941). Common at Porlock (Gore Point and in the Bay) in recent years, extending eastwards in small numbers to Watchet.

Nassarius reticulatus (Linnaeus, 1758) – Netted Dog-whelk

First recorded at Porlock (Gore Point) 9.2.74, but found more frequently in recent years. Several, 1.3.86 and 8.2.89. One from the Bay (below the submerged forest), 2.3.95. Empty shells, sometimes occupied by hermit crabs, are found east to Blue Anchor.

Sub-Class HETEROBRANCHIA

Order PYRAMIDELLOIDEA Gray, 1840

Family PYRAMIDELLIDAE Gray, 1840

Odostomia lukisi Jeffreys, 1858

Probably the less common of the pyramidellids associated with the tube-worm *Spirobranchus lamarcki* [*Pomatoceros triqueter* in Boyden *et al.* (1977)] at Gore Point and in Porlock Bay. Two specimens, collected 15.9.73, were positively identified as this species.

Odostomia plicata (Montagu, 1803)

This appears to be the commoner and more widely distributed pyramidellid associated with *Spirobranchus lamarcki*, having been recorded from Porlock, Greenaleigh Bay and Minehead.

Odostomia scalaris MacGillivray, 1843

Recorded from *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011) [as *Brachystomia*].

Noemiamea dolioliformis (Jeffreys, 1848)

Steephholm, found living in the *Sabellaria* reef on the spit, 3.6.00 (Gillard 2001). See also Killeen and Light (2000).

Infra-Class OPISTHOBRANCHIA

Order CEPHALASPIDEA Fischer, 1883

Family RETUSIDAE Thiele, 1925

Retusa obtusa (Montagu, 1803)

Frequent in muddy estuaries and brackish waters, Burnham and Weston (Swanton 1912). Densities up to 56 per square metre, on mud flats from Steart to Sand Bay (Boyden and Little 1973). Recorded from Hinkley Point intertidal flats (Bremner *et al.* 2011)

Order SACOGLOSSA Thering, 1876

Family PLAKOBRANCHIDAE Gray, 1840

Elysia viridis (Montagu, 1804)

Single specimens collected amongst red algae at low water, Porlock, 30.8.73, 17.3.76.

Order ANASPIDEA Fischer, 1883

Family APLYSIIDAE Lamarck, 1809

Aplysia punctata Cuvier, 1803 – Sea Hare

Appears sporadically on Gore Point: it was recorded in 1976, 1984, 1986, 1988 and 2001. Juveniles were seen, 17.3.76, and adults were common on the west side of the Point, 28.8.76, laying egg strings in great profusion. Some strings taken back to the lab hatched out in about a week. In 1984 juveniles were first seen 18.2.84, whilst adults with some egg strings were noted 18.3.84. Two small patches of egg strings seen

near the weir on Gore Point, 3.11.86. One very small juvenile, ca 10 mm, at Gore Point, 17.8.89. On 25.7.01, egg strings and juveniles of various sizes were common over the whole shore. Two records from Hurlstone Point, 17.3.84 and (east side) 4.11.86. Juveniles regularly seen there in 1988.

Order PLEUROBRANCHOMORPHA

Family PLEUROBRANCHIDAE Gray, 1827

Berthella plumula (Montagu, 1803)

Single specimens collected on the middle shore at Porlock (Gore Point), 2.4.73, 6.9.75, 26.10.84.

Order NUDIBRANCHIA Cuvier, 1817

Family TRITONIIDAE Lamarck, 1809

Tritonia lineata Alder and Hancock, 1848

One in a muddy middle-shore pool at Blue Anchor, 3.5.73.

Family DENDRONOTIDAE Allman, 1845

Dendronotus frondosus (Ascanius, 1774)

Common at extreme low water mark on *Tubularia* at Watchet (Helwell Bay), 7.9.71, but not seen again (on many other visits) until a single specimen was found 15.10.85. Another individual at Black Rock, St Audries Bay, 16.10.85.

Family GONIODORIDAE Adams and Adams, 1854

Ancula gibbosa (Risso, 1818)

St Audries Bay (Black Rock), Oct. 1986.

Goniodoris nodosa (Montagu, 1808)

Common at Porlock (Bassindale 1943c). Individuals collected from Gore Point, 27.2.71, 1.3.73, 8.9.83, 17.2.84, 26.10.84, 1.3.87 (quite common) and 8.2.89; Minehead, 2.3.75; Blue Anchor, 19.2.84, and Watchet (common), 27/28.3.90. All at low water springs and usually accompanied by patches of dorid eggs in spring. Both autumn records were of very small individuals.

Family ONCHIDORIDIDAE Gray, 1827

Acanthodoris pilosa (Abildgaard in Müller, 1789)

Both dark and pale forms abundant in Porlock Bay (Bassindale 1943c). Single individuals at Blue Anchor and Kilve (Bassindale 1941). Individuals and small groups seen in more recent years at Hurlstone Point, Minehead, Blue Anchor (with eggs, 19.2.84), Watchet, (with eggs, 2.3.87, 28.3.90), Black Rock (St Audries), Kilve, Hinkley Point and Brean Down.

Adalaria proxima (Alder and Hancock, 1854)

Porlock, Kilve and Weston (Bassindale 1941, 1943c) [as *Onchidoris muricata* – see Purchon (1948)]. More recent collections have established the present range to be from Porlock to Sand Point. It may be quite common on rocky shores at low water. Some confusion exists between the records of this species and those of *O. muricata*. Early papers tend to record *O. muricata* on the English coast and *A. proxima* on the Welsh, which is certainly not the true position. All the material available to Boyden *et al.* (1977), initially identified as *O. muricata*, was subsequently shown to be *A. proxima* and it is probable that the same is true of Bassindale's (1941, 1943c) records, as Purchon (1948) found some of his material to have been misidentified.

Onchidoris bilamellata (Linnaeus, 1767)

Abundant at Porlock, First Rocks (Bassindale 1943c) [as *O. fusca*]. Seen more recently at Blue Anchor, 19.2.84; Watchet, 2.3.75, 15.10.85; and Kilve, 20.12.72, 7.2.75.

Onchidoris muricata (O. F. Müller, 1776)

Recorded on Steephholm by Gillard (2001) – but does this refer to *Adalaria proxima* (see above)?

Family POLYCERIDAE Alder and Hancock, 1854

Limacia clavigera (O. F. Müller, 1776)

One at Porlock, Gore Point (Bassindale 1943c) [as *Euphurus claviger*].

Palio nothus (Johnston, 1838)

One from the lower shore at Porlock, Gore Point, 30.8.73.

Thecacera pennigera (Montagu, 1815)

Several seen on the lower shore in Greenleigh Bay, Aug. 1976. Not recorded again until 17.8.97.

Family DORIDIDAE Rafinesque, 1815

Doris pseudoargus Rapp, 1827

A young one at Gore Point, 18.3.84, and one adult with many egg masses on Hurlstone Point, 26.2.71 (Boyden *et al.* 1977) [as *Archidoris*].

Family DISCODORIDIDAE Bergh, 1891

Jorunna tomentosa (Cuvier, 1804)

One at low water on Gore Point, Porlock, 11.7.68.

Family FLABELLINIDAE Bergh, 1889

Flabellina pedata (Montagu, 1815)

Many small ones, with spawn, at low water mark, on Gore Point, 30.8.73. A single individual, 6.11.75.

Flabellina pellucida (Alder and Hancock, 1843)
A single record from Greenaleigh Bay, 28.2.71.

Family TERGIPEDIDAE Bergh, 1889

Tenellia adspersa (Nordmann, 1845)
On *Laomedea gelatinosa* from St Audries Bay (Stanford 1860) [as *Embletonia pallida*].

Family EUBRANCHIDAE Odhner, 1934

Eubranchius tricolor Forbes, 1838
Greenaleigh Bay, 20.8.74.

Family FACELINIDAE Bergh, 1889

Facelina auriculata (Müller, 1776)
Probably this species, although yellow/green in colour, in a high-level rock pool at Hurlstone Point, 26.2.90. One on *Tubularia indivisa* at Watchet (West Beach), 25.9.76 (Boyden *et al.* 1977) [as *F. coronata*]. Others were recorded at Watchet (Helwell Bay), one with striking red cerata on a *Buccinum* egg mass, beside *T. indivisa*, 28.3.90, and three on dead *T. indivisa* at low water springs, 11.8.95.

Family AEOLIDIIDAE Gray, 1827

Aeolidia papillosa (Linnaeus, 1761)
A single *Eolis* of the *gracilis* type, probably this species, was found amongst preserved *Tubularia* collected from Blue Anchor (Bassindale 1941). One large, cream-coloured individual seen at Watchet (Helwell Bay), 26.4.68.

Class BIVALVIA Linnaeus, 1758

Sub-Class PROTOBRANCHIA Pelseneer, 1889

Order NUCULOIDA Dall, 1889

Family NUCULIDAE Gray, 1824

Nut shells

Nucula nitidosa Winkworth, 1930

A living specimen in sand at low water, Porlock, 29.8.73. Fairly common on the lower beach at Blue Anchor, up to 15 per square metre (Boyden and Little 1973). Empty shells common from Porlock to Weston, and occasionally further up-channel.

Nucula nucleus (Linnaeus, 1758)

Valves common at Porlock, and the living animal recorded as common at Blue Anchor in mud below mean tide level by Bassindale (1941, 1943c). No living *N. nucleus* have been found in the Estuary recently, and Bassindale's observations may apply to *N. nitidosa*.

Sub-Class PTERIOMORPHIA Beurien, 1944

Order MYTILOIDA FERUSSAC, 1822

Family MYTILIDAE RAFINESQUE, 1815 Mussels

Modiolus barbatus (Linnaeus, 1758) – Bearded mussel

Single large mussels on Porlock (Gore Point), 26.10.84; a small one there, 8.2.89; and amongst *Tubularia* on Greenaleigh Point, 8.2.74.

Musculus costulatus (Risso, 1826)

Recorded at Porlock (Gore Point), 30.8.73.

Musculus discors Linnaeus, 1767

Five collected from Porlock (First Rocks) by Bassindale (1943c). Found more recently in *Laminaria* holdfasts at Porlock, amongst *Tubularia* tufts on Greenaleigh Point and in piddock holes at Kilve. Single individuals have been found at Minehead, Blue Anchor and in a *Corallina* run-off on Hinkley Point, 27.9.92 (Bamber and Irving 1993).

Mytilus edulis (Linnaeus, 1758) – Common mussel

Common and widely distributed in Porlock Bay, small individuals widespread on the middle shore at Blue Anchor, and occasional small specimens from Kilve (Bassindale 1941, 1943c). Extensive mussel beds do not occur on this coast. There is a small upper middle-shore bed in the freshwater stream west of Gore Point (Wilson *et al.* 1983), which was somewhat buried in shingle early in 1990 and again in 1994. Mussels similarly colonise a stream across Greenaleigh Point. A larger patch on fixed gravel north-east of Minehead Harbour, present in 1968 was subsequently smothered in sand. A similar patch was present on Dunster Beach in 1985, and scattered individuals were found in the same area in 1990. Small individuals occur in crevices on Hurlstone Point but numbers vary greatly from year to year. Few survived the hot summers of 1975/76 and 1983. Heavy settlement in 1984, but almost all were eaten by dog-whelks. Large clusters of small individuals have been reported on the intake tower for Hinkley Point Power Station. Scattered individuals may be found on all shores east to Hinkley Point (where Bremner *et al.* (2011) noted large individuals) and, rarely, at Sand Point. Present in the *Sabellaria* reef on Steephholm spit (Gillard 2001).

Order OSTREOIDA Férussac, 1822
Family OSTREIDAE Rafinesque, 1815

Oysters

Crassostrea gigas (Thunberg, 1793) – Pacific oyster

In low numbers along most of Somerset's (rocky) coast (Phillips 2014). This non-native species was originally introduced into South Wales for maricultural purposes.

Ostrea edulis Linnaeus, 1758 – Flat oyster

At one time there apparently were productive oyster beds in Blue Anchor Bay but Bassindale (1941, 1943c) recorded only empty shells there and at Porlock. Late twentieth-century attempts to raise oysters in the many perches at Porlock Weir all failed (Commander M. Ingram, pers. comm.). Plans are afoot (2014) to try again.

Order PECTINOIDA Gray, 1854
Family PECTINIDAE Rafinesque, 1815

Scallops

Aequipecten opercularis (Linnaeus, 1758) – Queen scallop

A single full-sized specimen attached to a rock at low water spring tide level, Greenaleigh Bay, 7.10.83.

Mimachlamys varia (Linnaeus, 1758)

One at Porlock (Bassindale 1943c) [as *Chlamys*]. Individuals have been seen there (Gore Point) on several occasions more recently, e.g. 18.2.84, and once at Blue Anchor.

Talochlamys pusio (Linnaeus, 1758)

One complete specimen and some odd valves from Porlock (Bassindale 1943c) [as *Chlamys distorta*]. One living specimen from Greenaleigh Bay, 28.2.71.

Family ANOMIIDAE Rafinesque, 1815

Saddle oysters

Anomia ephippium Linnaeus, 1758

Common and large at Porlock, but only a few at Blue Anchor (Bassindale 1941, 1943c). It is probably this species (but there may be confusion with *Heteranomia squamula*) which is now common at Porlock, in Greenaleigh Bay and at Minehead (Madbrain Sands). A few were noted at Blue Anchor, 27.8.73.

Heteranomia squamula (Linnaeus, 1758)

One recorded at Porlock (First Rocks) by Bassindale (1943c).

Order VENEROIDA Gray, 1854
Family KELLIDAE Forbes and Hanley, 1848

Kellia suborbicularis (Montagu, 1803)

Quite common at Porlock, Gore Point, and regularly found east to Blue Anchor. Occasional at Watchet.

Family LASAEIDAE Gray, 1842

Lasaea adansoni (Gmelin, 1791)

Locally common in rare patches of *Lichina pygmaea* at First Rocks, Porlock Weir, 1976, and amongst barnacles on Hurlstone Point, Oct. 1985.

Family CARDIIDAE Lamarck, 1809

Cockles

Cerastoderma edule (Linnaeus, 1758)

Bassindale (1941) [as *Cardium*] only recorded empty shells. Their abundance at Minehead and Dunster Beach suggests a substantial population, possibly offshore. Live cockles were widespread on Dunster Beach, 7.4.85, and a single live cockle was found at Weston in 1971.

Family TELLINIDAE Blainville, 1814

Macoma balthica (Linnaeus, 1758) – Baltic tellin

One of our commonest shells about Weston and between Burnham and Brean (Swanton 1912). Common in muddy sand on the middle shore at Blue Anchor and Weston (Bassindale 1941). One from Greenaleigh Bay, 9.9.83, two from Minehead (Madbrain Sands), 5.7.73, very common in muddy sand at Dunster Beach and Blue Anchor and from Steart to Weston. Maximum recorded density 884 per square metre (Boyden and Little 1973). Recorded at Hinkley Point by Bamber and Coughlan (1987), reaching 860 per square metre. With *Hediste diversicolor* and *Peringia ulvae*, it more or less dominates the large area of littoral sandy mud from Stert Flats to Brean Down, these three species accounting for 85% of the biomass (Bremner *et al.* 2011). Not so common at Sand Bay. Recorded from Steephelm (Gillard 2001), presumably on the spit.

Family SEMELIDAE Stoliczka, 1870

Abra tenuis (Montagu, 1803)

One dug from the clean sand of Greenaleigh Bay, 7.10.83, and a single *Abra*, perhaps this species, found in shell gravel on the lower shore at Minehead (Madbrain Sands) in 1972.

Scrobicularia plana (da Costa, 1778)

Although recorded at Weston – frequent in mud and clay at low water – by Swanton (1912) and

Bassindale (1941), none have been found there more recently. The species occurs in the muddy sand of Minehead Harbour, but only empty shells have been found elsewhere.

Family VENERIDAE Rafinesque, 1815

Venerupis corrugata (Gmelin, 1791)

Porlock (Gore Point), 17.2.84; several found there, 1.3.87.

Order MYOIDA Stoliczka, 1870

Family MYIDAE Lamarck, 1809

Sphenia binghami Turton, 1822

Very common in *Laminaria* holdfasts and in lower-shore crevices at Porlock in 1973 and 2001; common in Greenaleigh Bay, at Minehead and Watchet (up to 100 per square metre in piddock holes, 14.9.73); present at Blue Anchor and Kilve. Recorded from Steepholm (Gillard 2001). Apparently only subtidal at Hinkley Point (Bremner *et al.* 2011).

Family HIATELLIDAE Gray, 1824

Hiatella arctica (Linnaeus, 1767)

Recorded as common at Porlock (First Rocks) by Bassindale (1942c) [as *Saxicava gallicana*]. Fairly common there in *Laminaria* holdfasts, 30.8.73, and single individuals seen at Greenaleigh and Minehead (Madbrain Sands) in 1973-74.

Family PHOLADIDAE Lamarck, 1809

Piddocks

Pholas dactylus Linnaeus, 1758

Bassindale (1941) only recorded empty shells but, more recently, the species was common or abundant in deep burrows at Minehead (submerged forest), and from Blue Anchor to Hinkley Point. Recorded at Hinkley Point by Bamber and Coughlan (1987). Empty shells found as far up-channel as Weston.

Barnea candida (Linnaeus, 1758)

Bassindale (1941) found empty shells in rock borings at Blue Anchor and Kilve. More recently, living animals were common in the stiff clay of submerged forests in Porlock Bay and at Minehead; and occasional in patches of clay amongst the rocks at Hinkley Point. Recorded at Hinkley Point by Bamber and Coughlan (1987).

Barnea parva (Pennant, 1777)

Bassindale (1941) found one living specimen at Kilve, with many empty shells both there and at Blue Anchor. More recently, the species was

abundant between Blue Anchor and Hinkley Point.

Family TEREDINIDAE Rafinesque, 1815

Shipworms

Teredo navalis Linnaeus, 1758

Locally common in buried driftwood, Porlock Bay, 1974.

Class CEPHALOPODA Cuvier, 1795

Order SEPIOIDEA Zittel, 1895

Family SEPIDAE Leach, 1817

Sepia officinalis Linnaeus, 1758 – Common cuttlefish

Occasionally netted at Stolford and Weston, e.g. 5.6.40 (Bassindale 1941). Occasionally caught in the strainers of Hinkley Point power station. Developing egg capsules found on the shore at Porlock (Gore Point), 8.9.83; Greenaleigh Bay, 20.8.74, 9.9.83; Minehead (Culver Cliff), 26.7.01 and (Madbrain Sands), 9.6.94, 14.7.13. Cuttle ‘bones’ are occasionally stranded on Gore Point.

Family SEPIOLIDAE Leach, 1817

Sepiolo atlantica d’Orbigny, 1839 – Little cuttle

Occasionally taken in shrimp nets at Stolford and Burnham in 1939 (Bassindale 1941). More recently, just two records from Porlock, Aug. 1976 and 30.3.87.

Order MYOPSIDA Naef, 1921

Family LOLIGINIDAE Lesueur, 1821

Squid

Alloteuthis subulata (Lamarck, 1798)

Greenaleigh Bay, 20.8.74 and 27.8.76. Many clusters of egg capsules, at varying stages of development, anchored in the sand. On both occasions young squids hatched from examples taken back to the lab. They looked more like illustrations of this species than anything else. Similar egg capsules anchored in the sand at Minehead, Culver Cliff, 26.7.01. A 20cm specimen was photographed in a pool at Porlock Weir, Aug. 2013 (Nigel Phillips pers. comm.).

Order OCTOPODA Leach, 1818

Family OCTOPODIDAE d’Orbigny, 1839

Octopus vulgaris Cuvier, 1797 – Common octopus

Individuals stranded at First Rocks, 7.3.89, and at Hurlstone Point, 1.4.76 and Nov. 1988 (dead).

PHYLUM ENTOPROCTA Nitsche, 1869

Order COLONIALES

Family BARENTSIIDAE

Barentsia gracilis M. Sars, 1835

Kilve, under stones at low water, 18.8.39 (Bassindale 1941).

Barentsia mutabilis Toriumi, 1951

Kilve, under stones at low water, 18.8.39 (Bassindale 1941).

Family PEDICELLINIDAE

Pedicellina cernua (Pallas, 1774)

Hurlstone Point, 19.8.97; Gore Point, 16.8.97.

PHYLUM PHORONIDA Hatschek, 1888

Phoronis hippocrepi Wright, 1856

Hinkley Point. The *Phoronis* sp. recorded from the *Corallina* cryptofaunal community by Bremner *et al.* (2011) would seem, from Emig (1979), most likely to have been the encrusting form of this species.

PHYLUM BRYOZOA

Moss animals

Class STENOLAEMATA Borg, 1926

Order CYCLOSTOMATIDA Busk, 1852

Family CRISIIDAE Johnston, 1838

White-clawed sea-mosses

Crisia aculeata Hassall, 1841

Fairly common at Porlock, First Rocks and Gore Point in 1940 (Bassindale 1943c), and recorded there again, 29.8.74, 17.3.76. One colony from Greenaleigh Bay, 8.2.74.

Crisia denticulata (Lamarck, 1816)

Rare at Porlock in 1940 (Bassindale, 1943c). One colony found there, 17.3.76.

Crisia eburnea (Linnaeus, 1758)

Common at Porlock, First Rocks, (Bassindale 1943c); many colonies found there at low water, 29.8.73, 17.3.76.

Crisidia cornuta (Linnaeus, 1758)

Rare at Porlock in 1940 (Bassindale 1943c) and only single colonies found there, on Gore Point, 29.8.73 and 17.3.76.

Family TUBULIPORIDAE Johnston, 1838

Tubulipora liliacea (Pallas, 1766)

Fairly common at Porlock (First Rocks and Gore Point) in 1940 (Bassindale 1943c).

Tubulipora lobifera Hastings, 1963

Two colonies at Porlock, First Rocks (Bassindale 1943c) [as *T. lobulata*]. Many colonies, probably of this species, found on Gore Point, 29.8.73.

Family PLAGIOECIIDAE Canu, 1918

Plagioecia patina (Lamarck, 1816)

Porlock: abundant at First Rocks and Gore Point but not common in Porlock Bay (Bassindale 1943c). Several colonies at Blue Anchor (Bassindale 1941). More recently, found to be common at Porlock, Minehead and Blue Anchor.

Plagioecia sarniensis (Norman, 1864)

Common and widespread at Porlock in 1940 with a number of new colonies (Bassindale 1943c) [as *Diastopora*]. It has not been reported since. Hayward and Ryland (1985) say it is not found in the Bristol Channel whilst Porter (2012) says that it is not found in shallow water. The record probably refers to *P. patina*.

Family LICHENOPORIDAE Smitt, 1867

Disporella hispida (Fleming, 1828)

Common and widespread at Porlock, numerous small colonies (Bassindale 1943c) [as *Lichenopora*]. More recently, many colonies at Porlock and in Greenaleigh Bay.

Class GYMNOLAEMATA Allman, 1856

Order CHEILOSTOMATIDA Busk, 1852

Family AETIDEIDAE Smitt, 1868

Aetea anguina (Linnaeus, 1758) – Snakeshead coralline

One colony on a *Laminaria* holdfast at Porlock, Gore Point, 29.8.73.

Family SCRUPARIIDAE Busk, 1852

Scruparia ambigua (d'Orbigny, 1841)

One colony at Porlock, First Rocks, (Bassindale 1943c).

Family MEMBRANIPORIDAE Busk, 1852

Membranipora membranacea (Linnaeus, 1767) – Sea mat

Widespread on *Laminaria* fronds at Porlock (First Rocks and Gore Point).

Family ELECTRIDAE d'Orbigny, 1851

Conopeum reticulum (Linnaeus, 1767)

On *Sabellaria* tubes at Hinkley Point (Bamber and Coughlan 1987).

Electra crustulenta (Pallas, 1766)

Not recorded by Bassindale, but by 1977 it had become one of the commonest bryozoans along the upper stretches of the Somerset coast. It may be abundant around Brea Down.

Electra monostachys (Busk, 1854)

Bassindale (1941, 1943c) [as *E. hastingsae*]

found one colony in Porlock Bay but recorded it common up-channel from Blue Anchor. More recently, it was present on Warren Point (Minehead), 15.8.97, and generally common from Blue Anchor to Sand Point. Sparse colonies on stones from Steepholm spit, 12.8.95. It is one of the most widely-distributed bryozoans in the Severn Estuary.

Electra pilosa (Linnaeus, 1767) – Frosty sea mat
Common at Porlock (First Rocks and Gore Point), but rare in Porlock Bay (Bassindale 1943c). More recently, it was common from Porlock to Watchet, extending east to Hinkley Point where it was abundant around the outfall, 8.9.87.

Family FLUSTRIDAE Fleming, 1828

Flustra foliacea (Linnaeus, 1758) – Hornwrack
Common on the lowest tides in Greenaleigh Bay.

Family CALLOPORIDAE Norman, 1903

Amphiblestrum auritum (Hincks, 1877)
Porlock, Blue Anchor, Kilve and Weston (Bassindale 1941, 1943c) [as *Membranipora aurita*]. This is one of the commonest and most widely-distributed bryozoans in the area, occurring from Porlock to Sand Point.

Callopora dumerilii (Audouin, 1826)
Rare at Porlock (First Rocks and Gore Point) (Bassindale, 1943c) [as *Membranipora dumerili*]. A colony there, 29.8.73. Present on Warren Point (Minehead), 15.8.97.

Callopora lineata (Linnaeus, 1767)
Fairly common at Porlock (Bassindale 1943c) [as *Membranipora*]. More recently, it was found there on *Anomia* shells and *Laminaria* holdfasts.

Family BUGULIDAE Gray, 1848

Bicellariella ciliata (Linnaeus, 1758)
Rare at Porlock (First Rocks and Gore Point) (Bassindale 1943c) [and as *Brettia tubaeformis*]. Rare at Kilve, May 1939; common there, 18.8.39, but absent, 10.3.40 (Bassindale 1941). Many colonies in 1973 at Porlock, Minehead and Blue Anchor – but none at Kilve. Recorded on Warren Point, 15.8.97.

Bugula fulva Ryland, 1960
Several colonies at low water springs, Porlock (Gore Point), 17.3.76.

Bugula turbinata Alder, 1857
Many colonies at low water, Porlock (Gore Point), 29.3.73.

Family CANDIDAE d'Orbigny, 1851

Scrupocellaria reptans (Linnaeus, 1758)
Rare at Porlock (Gore Point) and in Porlock Bay (Bassindale 1943c). One colony there, 29.8.73.

Scrupocellaria scrupea Busk, 1852
One colony at Porlock (Gore Point), 29.8.73

Scrupocellaria scruposa (Linnaeus, 1758)
Rare at Porlock (First Rocks and Gore Point) (Bassindale 1943c). Several colonies there at low water, 29.8.73 and 16.10.74.

Family CRIBRILINIDAE Hincks, 1879

Cribrilina Gray, 1848 sp.
On rocks at low water, Blue Anchor, 3.5.73.

Family CHORIZOPORIDAE Vigneaux, 1949

Chorizopora brongniartii (Audouin, 1826)
A single colony from Porlock Bay (Bassindale 1943c).

Family ROMANCHEINIDAE Jullien, 1888

Escharella immersa (Fleming, 1828)
Bassindale (1941, 1943c) [as *Mucronella peachii*] recorded it at Porlock, Blue Anchor, Kilve and Weston. More recently, abundant from Porlock to Weston.

Escharella variolosa (Johnston, 1838)
Widespread but rare at Porlock. (Bassindale 1943c) [as *Mucronella*]. Single colonies at Porlock, 29.8.73, and Greenaleigh Bay, 8.2.74.

Escharella ventricosa (Hassall, 1842)
Widespread but rare at Porlock (Bassindale 1943c) [as *Mucronella*].

Family CRYPTOSULIDAE Vigneaux, 1949

Cryptosula pallasiana (Moll, 1803)
Fairly common at First Rocks and Gore Point, Porlock (Bassindale 1943c) [as *Lepralia*]. More recently, abundant on Gore Point and in Greenaleigh Bay. One record from Hurlstone Point, 19.8.97.

Family ESCHARINIDAE Tilbrook, 2006

Phaeostachys spinifera (Johnston, 1847)
Abundant at First Rocks and Gore Point, Porlock (Bassindale 1943c) [as *Schizoporella*]. Common on *Laminaria* holdfasts at Porlock, 29.8.73, and present in Greenaleigh Bay, 8.2.74.

Family SCHIZOPORELLIDAE Jullien, 1883

Schizoporella unicornis (Johnston in Wood, 1844)
Porlock (Gore Point), 16.8.97.

Family SMITTINIDAE Levinsen (1909)
Smittoidea reticulata (Macgillivray, 1842)
 One colony in Porlock Bay (Bassindale 1941) [as *Smittia*]. More recently, found at low water from Porlock to Blue Anchor.

Family BITECTIPORIDAE MacGillivray, 1895
Schizomavella linearis (Hassall, 1841)
 Common at Porlock (Bassindale 1943c) [as *Schizoporella*]. More recently, common at Porlock, Greenaleigh Bay and Minehead (Madbrain Sands).

Family MICROPORELLIDAE Hincks, 1879
Microporella ciliata (Pallas, 1766)
 A single colony at Porlock (Gore Point) (Bassindale 1943c).

Family CELLEPORIDAE Johnston, 1838
Cellepora pumicosa (Pallas, 1766) – Orange Pumice Bryozoan
 One colony at Gore Point, Porlock (Bassindale 1943c). Several colonies on *Laminaria* holdfasts on Gore Point, 29.8.73.

Celleporina caliciformis (Lamouroux, 1816)
 On *Laminaria* holdfasts at Porlock, 29.8.73 (Boyden *et al.* 1977) [as *C. hassalli*].

Order CTENOSTOMATIDA Busk, 1852
 Family ALCYONIDIIDAE Johnston, 1838
Alcyonidioides mytili (Dalyell, 1848)
 Gore Point, 16.8.97, Greenaleigh Point, 17.8.97, Warren Point, 15.8.97, and on *Nucella lapillus* shells at Watchet, 15.10.85.

Alcyonidium diaphanum (Hudson, 1778)
 Recorded from Hurlstone Point, 19.8.97.

Alcyonidium gelatinosum (Linnaeus, 1761)
 Recorded at Blue Anchor, Kilve and Weston by Bassindale (1941). More recently, we have found colonies on most beaches between Porlock and Brean Down.

Alcyonidium hirsutum (Fleming, 1828)
 Watchet (Hinck 1880). Fairly common at Porlock (First Rocks and Gore Point) (Bassindale 1943c). More recently, recorded on *Corallina* in upper-shore pools on Gore Point, Hurlstone Point and Blue Anchor; and on *Mastocarpus* from the middle shore at Watchet. In *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2007).

Alcyonidium reticulum Ryland and Porter, 2000
 Ryland and Porter (2000) considered that all records of *A. polyoum* in Boyden *et al.* (1977)

should almost certainly be referred to this species. Common at Porlock (Bassindale 1941, 1943c) [as *A. polyoum*]. Gore Point and Watchet (Ryland and Porter 2000). Common from Porlock to Brean Down. Present at Weston.

Family FLUSTRELLIDRIDAE Bassler, 1953
Flustrellidra hispida (Fabricius, 1780)
 Common at Porlock (First Rocks) (Bassindale 1943c) [as *Flustrella*]. More recently, it was common there and at Hurlstone Point; one record from Greenaleigh Point, 17.8.97.

Family NOLELLIDAE Harmer, 1915
Anguinella palmata van Beneden, 1845
 St Audries (Black Rocks) at extreme low water, 16.10.85 and autumn 1987.

Family WALKERIIDAE Hincks, 1880
Walkeria uva (Linnaeus, 1758)
 On *Laminaria* holdfasts, 29.8.73, and stones, 31.7.76, at Porlock: on *Amathia lendigera* from Greenaleigh Bay, 8.2.74, and one colony, probably of this species, from Minehead (Madbrain Sands), 28.8.73. Watchet (Helwell Bay), 14.8.97.

Family FARRELLIDAE d'Hondt, 1983
Farrella repens (Farre, 1837)
 Bassindale (1941) found var. *elongata* on empty *Pholas* shells at Blue Anchor. Recorded more recently at Blue Anchor, 27.8.73; Kilve, 7.2.74; and on *Bowerbankia* at Brean Down, 13.9.73.

Family VESICULARIIDAE Hincks, 1880
Amathia lendigera (Linnaeus, 1758)
 Single colonies from Porlock, 29.8.73, and Greenaleigh Bay, 8.2.74.

Bowerbankia gracilis Leidy, 1855
 In *Corallina* cryptofaunal patch on Hinkley Point (Bremner *et al.* 2011).

Bowerbankia imbricata (Adams, 1798)
 One colony on Brean Down; all other records in Boyden *et al.* (1977) were from further up the Severn Estuary.

PHYLUM ECHINODERMATA Bruguière, 1791
Class CRINOIDEA J. S. Miller, 1821

Sea lilies

Order COMATULIDA Clark, 1908
 Family ANTEDONIDAE Norman, 1865

Feather stars

Antedon bifida (Pennant, 1777)
 Single individuals have been recorded occa-

sionally at Porlock (Gore Point), 31.10.74, 27.2.75, 6.10.83 and 25.10.84. The last was green in colour and about 10 mm across; the others were the usual pink colour and carried the parasitic annelid *Myzostoma cirriferum*.

Class ASTEROIDEA de Blainville, 1830
Starfish

Order VALVATIDA Perrier, 1893
Family SOLASTERIDAE Viguier, 1878

Crossaster papposus (Linnaeus, 1767) – Sun star
Rare at Kilve, 21.5.39, but common there, 18.8.39 (Bassindale 1941) [as *Solaster*]. More recently, large individuals have been seen regularly from Porlock and (especially) Hurlstone Point to Watchet. Small Sun stars, 3-5cm across, were frequent on Dunster Beach, 7.4.85. A dead one was picked up at Kilve in 1983. The up-channel limit appears to be Sand Point where Mr Roger Stenner, of Weston-super-Mare, found one 4.9.94 and mentioned collecting another “about 10 years ago”.

Order SPINULOSIDA Perrier, 1884
Family ECHINASTERIDAE Verrill, 1870

Henricia oculata (Pennant, 1777)
Regularly found from Porlock Weir to Minehead, especially on Hurlstone Point, but not further east. Commoner in spring than autumn; purple ones predominate.

Order FORCIPULATIDA Perrier, 1884
Family ASTERIIDAE Gray, 1840

Asterias rubens Linnaeus 1758 – Common starfish
Sporadically found from Porlock to Minehead, but not further east. Commonest at Hurlstone Point and in the spring, but sparse there in the spring of 1984. Two on Gore Point, 1.3.98, another on Greenaleigh Point, 17.8.97.

Class OPHIUROIDEA Gray, 1840
Brittle Stars

Order OPHIURIDA J. Müller and Troschel, 1840
Family OPHIOTRICHIDAE Ljungman, 1867

Ophiothrix fragilis Abildgaard, 1759
Bassindale (1943c) found it common at Porlock, especially so at First Rocks. More recently, it has been recorded from Glenthorne (illustrated by Phillips (2011, p.30)) to Greenaleigh Bay. Sometimes very common, as on 16.3.72.

Family OPHIUCOMIDAE Ljungman, 1867

Ophiocolina nigra (Abildgaard, 1789)
A single specimen collected in Greenaleigh Bay, 20.3.73.

Ophiopsila aranea Forbes, 1843

Single records from Porlock (Gore Point), 16.8.97, and Minehead (Warren Point), 15.8.97. Generally regarded as a sublittoral species (Southward and Campbell 2006), these records need corroboration as they appear to be the first on the shore and for the Bristol Channel.

Family AMPHIURIDAE Ljungman, 1867

Amphipholis squamata (Delle Chiaje, 1828)
Single specimens recorded by Bassindale (1941, 1943c) at Porlock and Blue Anchor. More recently, small ophiuroids, probably of this species, were generally common from Porlock to Watchet, extending east to Hinkley Point (one record from the outflow channel, 8.9.87). Included in Bremner *et al.* (2011).

Family OPHIURIDAE J. Müller and Troschel, 1840

Ophiecten affinis (Lütken, 1858)
A single individual at extreme low water, Porlock (Gore Point), 8.2.89.

Class ECHINOIDEA Leske, 1778
Sea urchins

Order CAMARODONTA Jackson, 1912
Family PARECHINIDAE Mortensen, 1903

Psammechinus miliaris P. L. S. Müller, 1771
Individuals occasional at Gore Point and in Porlock Bay, 3.4.69, 16.3.72, 27.2.75, 31.7.76, 6.10.83 (with young *Flabelligera affinis* amongst the spines) and 6.4.85. One large urchin in a low-water pool at Minehead (Madbrain Sands), 22.5.75.

Family ECHINIDAE Gray, 1825

Echinus esculentus Linnaeus, 1758 – Common sea urchin

Common in Porlock Bay (Bassindale 1943c). More recently, large individuals have been seen regularly on the lowest tides in spring both on Gore Point and Hurlstone Point – but not in autumn or further east.

Class HOLOTHURIOIDEA Von Siebold, 1848
Sea cucumbers

Order DENDROCHIROTIDA Grube, 1840

Family CUCUMARIIDAE Ludwig, 1894

Pawsonia saxicola (Brady and Robertson, 1871)

All sizes locally common at Porlock, First Rocks, (Bassindale 1943c) [as *Cucumaria*]. Several were found at First Rocks, 6.10.83. They fitted Southward's [1972] description, except that the tentacles were pale, not dark. Another, similar, individual, 17.2.84, and a larger one with dark tentacles, 26.10.84 – all at First Rocks. Three found on Gore Point, 3.11.86, and five there on 8.2.89; tentacles colourless in the smaller individuals, yellow in the larger. Interestingly, Southward and Campbell (2006) do not mention the colour of the tentacles!

Ocnus lacteus (Forbes and Goodsir, 1839)

Three from Porlock (Gore Point), 27.8.72 and another one, probably of this species, 8.3.77.

PHYLUM CHORDATA

Class ASCIDIACEA Nielsen, 1995

Sea-squirts

Order PHLEBOBRANCHIA Lahille, 1886

Family ASCIDIIDAE Herdman, 1882

Ascidia conchilega O. F. Müller, 1776

Frequent from Porlock to Greenaleigh Bay, and occasional east to Blue Anchor.

Ascidia mentula O. F. Müller, 1776

The only positive record is from Greenaleigh Bay, 20.8.74.

Order STOLIDOBRANCHIA Lahille, 1886

Family STYELIDAE Sluiter, 1895

Botrylloides leachii (Savigny, 1816)

One very small colony on a stone in Greenaleigh Bay, 8.2.74. Searched for but not found on subsequent visits.

Botryllus schlosseri (Pallas, 1766)

The only record is of a large blue colony at extreme low water mark, Porlock (Gore Point), 8.9.83.

Dendrodoa grossularia (Van Beneden, 1846)

Common as far east as Weston, although not recorded anywhere by Bassindale (who realised that ascidians were present but was unable to identify any to species). Those on western coasts are the typical red colour, but further east they become browner and paler. A few small ones on Steepholm spit, 12.8.95, and at Sand Point.

Polycarpa pomaria (Savigny, 1816)

Two found at Porlock, Gore Point, 29.8.73.

Styela coriacea (Alder and Hancock, 1848)

Collected at Porlock, Gore Point, 3.11.86.

Family PYURIDAE Hartmeyer, 1908

Pyura tessellata (Forbes, 1848)

Quite common in Porlock and Greenaleigh Bays. Present on the lower shore at Minehead, 28.8.75 and 10.3.74.

Acknowledgements

This fauna list is obviously the work of far more people than it is possible to list here but, clearly, it is based on the work of Drs C. R. Boyden, C. Little and C. Mettam (Boyden *et al.* 1977) which, in turn, was rooted on the inaugural surveys of Mr R. Bassindale, who taught me so much about identification whilst I was at Dale Fort. Many biologists who served on the staff at Nettlecombe Court between 1967 and 1999 contributed records (and/or specimens) especially Mr J. A. Bayley, Mr P. S. Croft, Dr M. R. Litterick, Mr J. H. Oldham, Dr M. A. Ward and Mr C. M. Wilson. And all of us are grateful to those many students who found specimens that we would have missed, or who asked that crucial question about an animal that caused us to look at it more closely. All this work has been augmented by the very many reports that have been written in connection with the existing or proposed Nuclear Power Stations on Hinkley Point.

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