The shore fauna of Brighton, East Sussex (eastern English Channel): records 1981-1985 (updated classification and nomenclature)

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Offshore view of Roedean School and the sampling area of the shore. Photo: Dr Gerald Legg

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Map showing location of regular monitoring sites: A, Roedean; B, Kemp Town.
Scale 1:25000

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INTRODUCTION


View south of wave-cut platform gullies

These records are the results of a qualitative comprehensive shore fauna monitoring programme undertaken in the Brighton area, East Sussex, south-eastern England, principally during the period March 1981 – February 1985 (limited recording February 1981 and March 1985 – December 1986, a few chance observations subsequently). They were originally presented in the form of two reports (Ventham 1990, 1992), and the two have been combined herein with updated classification and nomenclature with reference to Hayward & Ryland (2017) and the World Register of Marine Species.

Other publications/limited circulation reports relevant to the marine fauna of Brighton and its vicinity include: Merrifield (1860); Anon. (1960); Wood (1984, 1992); Wood & Jones (1986); Tittley *et al*. (1986); George & Fincham (1989); Light (1990); Jenkins (1991); Irving (1996, 1999); Barne *et al*. (1998). Also, records of Brighton marine fauna limited to one or a few species are to be found scattered through the literature e.g. Hincks (1868), Crisp & Southward (1958), Goodwin & Fish (1977), Green & Macquitty (1987). The Sussex Seasearch project, initiated 1992, publishes annual reports on sublittoral habitats and their communities while Sussex Shoresearch, started 2005, similarly undertakes annual surveys building a database on intertidal wildlife to help promote conservation.


Gullies on an ebbing tide

METHODS

Two 400 m stretches of shore were selected for regular monitoring purposes, one at Roedean with its western boundary *c*. 580 m east of the marina, and the other at Kemp Town with its eastern boundary adjoining the marina west breakwater root (see map, p. 2). They were worked once a fortnight during periods of spring tides, mainly in the early morning, usually (weather/light permitting) for some 30-60 minutes either side of the time of LW, March 1981 – February 1985 at Roedean and May 1981 – February 1985 at Kemp Town (on the day following the Roedean visit). On each occasion, general observations were made on the macrobenthos across the shore and miscellaneous samples taken, usually 10-15 at Roedean and 7-10 at Kemp Town, which included a selection of habitat samples (e.g. *Blidingia minima* from the littoral fringe and/or upper eulittoral, and small tufted algae, hydroids, barnacles and a variety of other scrapings from the eulittoral and/or sublittoral fringe) for the extraction of associated meio- and macrofauna. The horizontal location for sampling was varied randomly within each 400 m each fortnight.

Samples were always small and generally collected into 75 x 25 mm and 90 x 45 mm tubes, a rough guide to the average size of some of the habitat samples being as follows: *Polysiphonia fucoides*, 30-110 ml (lightly

compressed, damp); other small tufted algae e.g. *Corallina officinalis*, 30 ml (lightly compressed, damp); *Blidingia minima* mat, each sample a scraping from an area 5 x 2 cm; hydroids, 2.5-10 ml (lightly compressed, damp); barnacles, each sample containing 20-30 adults.

The period over which monitoring extended varied according to taxon and is given where appropriate in the systematic list e.g. monitoring of hydroids and bryozoans extended over the entire period of the investigation, viz. March 1981 – February 1985, whilst harpacticoid copepod monitoring was restricted to the period February 1983 – February 1985 and fish were given special attention August 1982 – February 1985.

A network of reference points of known estimated tide height in m ACD was established early on in the investigation (and checked intermittently throughout) by following a number of falling and rising tides across the shore with reference to tide height predictions in the Admiralty Tide Tables which enabled the majority of observations and samples to be assigned approximate tide heights to the nearest 0.1 m ACD.

Special fortnightly visits coinciding approximately with neap tides and supplementing the regular spring tide programme were made to Roedean to record the insects (and other organisms) to be found in the supralittoral, littoral fringe and upper eulittoral, June 1983 – December 1984, insects having been monitored during the spring tide visits since January 1983.

LWS tide visits covering the full stretch of shore between the marina east breakwater root and the Ovingdean-Rottingdean boundary were undertaken seasonally for the purposes of general observation and occasional sampling (see map, p. 2).

BRIGHTON TIDAL DATA

Predicted heights of tides 1981-86 (Admiralty 1980-85) expressed in metres above Chart Datum (m ACD):

MHWS 6.5

MHWN 5.1

MTL 3.5

MLWN 1.9

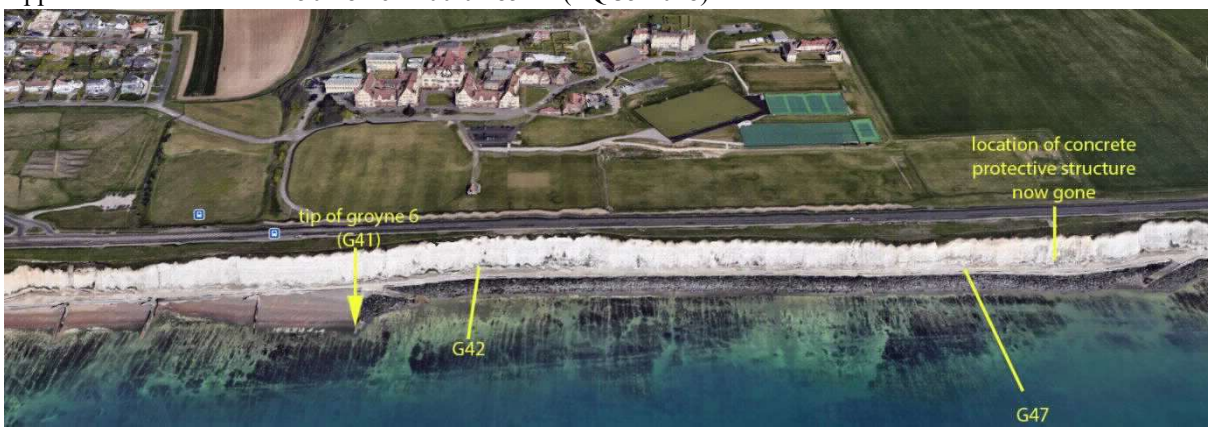
MLWS 0.6

LWS tides occurred in the early morning and early evening.

Note. MLW, 1.3 m ACD, is referred to herein as Average Low Tide Level (ALTL).

THE ROEDEAN SITE

Approximate centre of site 50º48.46´N 00º04.85´W (TQ 352 028)



Physical description

A 400 m stretch of chalk wave-abrasion platform dissected by numerous channels and pools, backed by a chalk cliff protected by a sea-wall/undercliff walk (concrete, the vertical face with embedded flints). Groynes (concrete with/without embedded flints) extended seawards from the sea-wall, retaining a beach of flint shingle interspersed with cobble, gravel and/or sand, the beach overlying the upper part of the chalk platform down to a little below MTL. Beach material was usually banked to higher levels on the western sides of groynes, temporary reversals (higher levels on the eastern sides of groynes) occasionally occurring during periods of strong to gale force south-easterly winds (the prevailing wind being south-westerly). Three of the groynes on the selected stretch of shore possessed fallen-into-disrepair sections which extended across the chalk platform down to MLWS, the width of

the platform between the lower boundary of the beach (*c*. 3.3 m ACD) and MLWS (0.6 m ACD) averaging *c*. 115 m. A double row of concrete/embedded flint blocks (the foundations of the dismantled 'Volk's Brighton and Rottingdean Seashore Electric Railway', operational 1896-1901 (Hollingdale & Drummond 1974; Underwood 1978)) ran along the chalk platform a little above MLWN. Channels, pools and depressions were littered with stones and, especially below ALTL, often sandy, most of the sand scoured away overwinter as was the detrital sandy sediment which commonly coated much of the bedrock surface. Embedded flints protruded from the chalk, the chalk commonly riddled with old piddock burrows. To the east of the regularly monitored stretch of shore an extensive stable flint cobble bed was situated astride the LW mark.

Zonation

Supralittoral (Maritime zone)

Lichen belt: a sparse dusting of essentially terrestrial lichens, chiefly *Caloplaca flavescens*, on the predominantly barren surfaces of artificial structures (wall providing a protective facing to the foot of the cliff above the level of the sea-wall/undercliff walk, sea-wall/undercliff walk parapet, upper parts of groynes), *c*. 11.9 m ACD (the average level of the top of the cliff-protecting wall which was assumed for convenience to coincide approximately with the terrestrial-supralittoral transition, an assumption supported by the distribution of angiosperm vegetation which gained root-hold here and there on ledges etc. on the cliff-face and cliff-protection works) – *c*. 7.6 m ACD (the lowest recorded level of lichen (*C. flavescens*) on a groyne).

HW tidal debris (algae and other jetsam) deposited on the beach and intermittently cast by autumn/winter storms from around the HW mark on the beach to the higher level on top of the sea-wall/undercliff walk, *c*. 9.0 m ACD.

Littoral fringe (Lewis 1964)


View west from east of Ovingdean Gap

Divided into upper and lower belts of Cyanophyta (delineated by a dark film) and *Blidingia minima* (with small *Porphyra umbilicalis* scattered amongst the *Blidingia*) respectively, both belts confined to groynes and the transition between the two averaging *c*. 6.1 m ACD (MHWS = 6.5), the upper limit of Cyanophyceae varying between *c*. 7.3 and *c*. 7.9 m ACD (sparing above *c*. 7.3). To the east and west of the regularly monitored stretch of shore were localized areas on the eastern sides of groynes where diminished beach material exposed the sea-wall to direct pounding by waves resulting in the spray-extension of the Cyanophyta belt to the top of the sea-wall parapet, *c*. 9.7 m ACD.

Eulittoral zone (Lewis 1964)

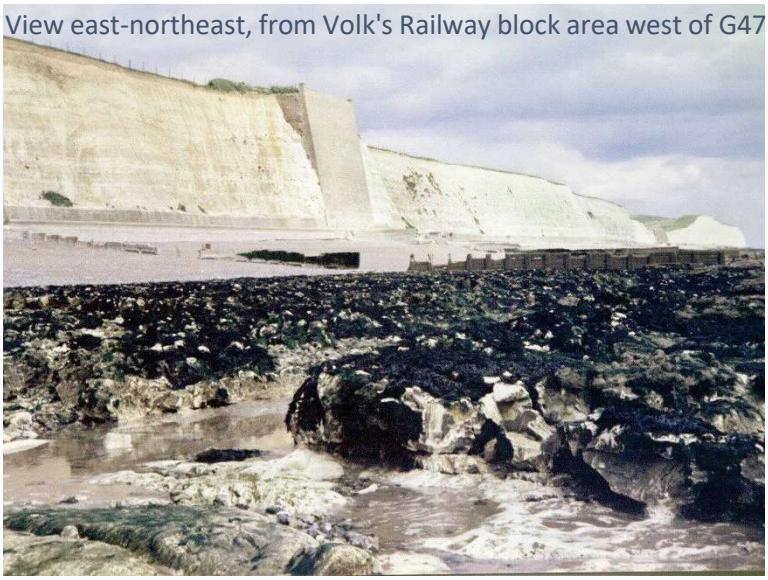
Extended from a broken yet clearly discernible barnacle line (upper limit of *Semibalanus balanoides* in quantity) variably obscured/suppressed by *Fucus spiralis* and by downshore extension from the littoral fringe of *Blidingia minima*, *c*. 5.5 m ACD, on groynes, down to the upper boundary of the *Laminaria* belt averaging *c*. 0.7 m ACD (MLWS = 0.6), on the lower part of the chalk platform. The zone included four distinctive algal belts:

Fucus spiralis: confined to the beach-retaining groynes, typically capping the barnacle line, the thalli becoming smaller and increasingly scattered amongst barnacles at lower levels where they intermingled with the uppermost

and likewise small and scattered *Fucus vesiculosus*, the approximate transition where neither species outnumbered the other averaging *c*. 4.8 m ACD.

Fucus vesiculosus: the uppermost *Fucus* belt on the chalk platform (the thalli extending locally to higher levels, chiefly as small scattered individuals, on the groynes, as indicated above), extending on average *c*. 25 m seaward of the lower boundary of the beach (average level of the latter *c*. 3.3 m ACD (MTL = 3.5)) before transition to dominance by *Fucus serratus* at *c*. 2.3 m ACD.

Fucus serratus: dominated the appearance of the foreshore in a belt *c*. 65 m wide down to *c*. 1.3 m ACD (ALTL).



Rhodophyta: a belt averaging *c*. 20 m wide down to *c*. 0.7 m ACD, with *Polysiphonia fucoides* dominant and the sand-binding species *Rhodothamniella floridula* conspicuous.

Upper sublittoral zone (Sublittoral fringe) (Lewis 1964)

A discontinuous belt of generally sparse *Laminaria saccharina* (dominant) and *Laminaria digitata* averaging *c*. 5 m in width between *c*. 0.7 and *c*. 0.6 m ACD (MLWS), and extending downshore into the sublittoral.

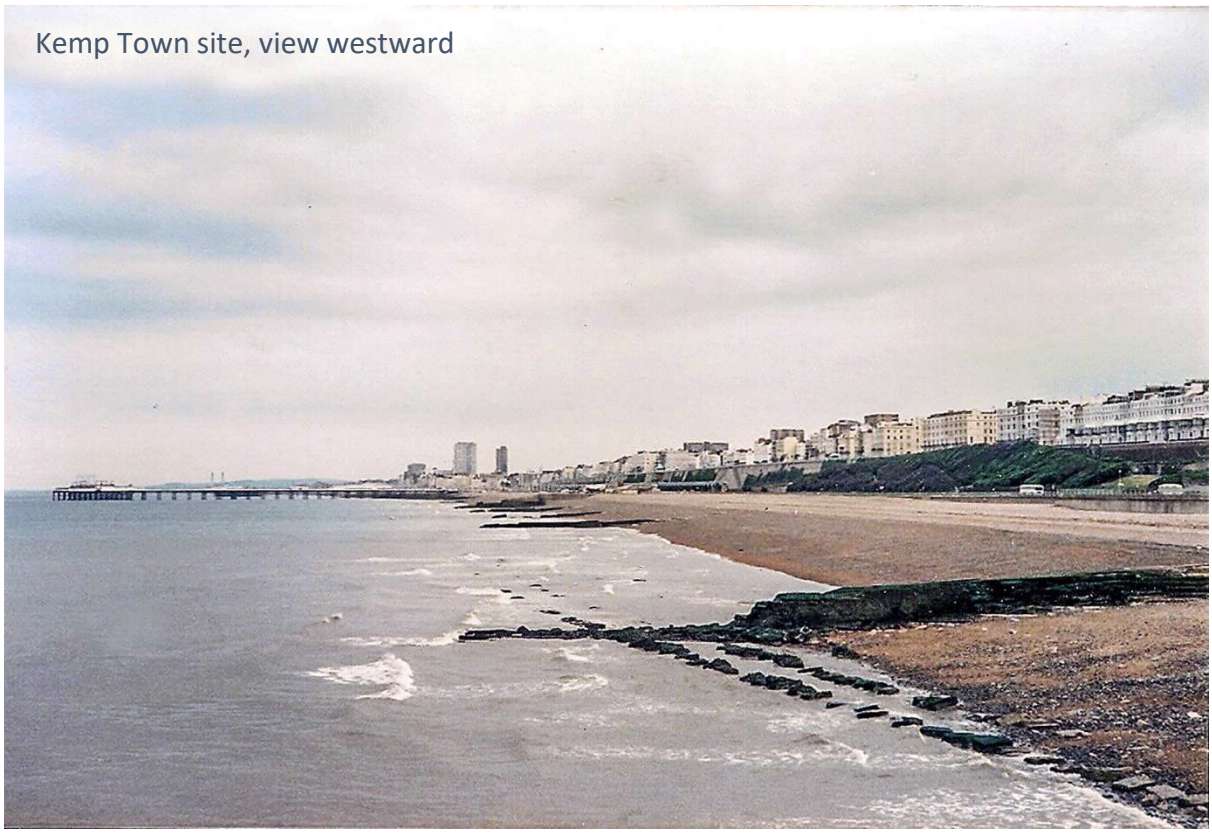
THE KEMP TOWN SITE

Approximate centre of site 50º48.75´N 00º06.53´W (TQ 333 032)

Physical description

A stretch of chalk wave-abrasion platform which dipped beneath sand *c*. 400 m west of the marina, overlain by a predominantly flint shingle beach down to *c*. 1.3 m ACD (ALTL), the beach backed by a promenade. A groyne (concrete with embedded flints) *c*. 100 m west of the marina west breakwater root (concrete with steel piling constituting its west face up to a height of *c*. 5.8 m ACD) extended seawards from the promenade (concrete) to just beyond the lower boundary of the shingle; a long-since storm-damaged section of the groyne, only the basal portion intact, extended further across the chalk platform down to *c*. 0.6 m ACD (MLWS). A double row of concrete/embedded flint blocks (the foundations of the dismantled 'Brighton and Rottingdean Seashore Electric Railway') emerged from the lower boundary of the shingle between the marina west breakwater root and the groyne, intersected with the basal remnant of the groyne, and ran westwards in a gentle arc along the chalk platform to disappear beneath sand several metres seaward of the lower boundary of the shingle in the eastern vicinity of a second groyne (concrete with embedded flints), the groyne *c*. 450 m west of the marina and falling outside the regularly monitored area.

The average width of the chalk platform between the lower boundary of the shingle at ALTL (1.3 m ACD) and MLWS (0.6 m ACD) was *c*. 40-50 m. For the most part, the foundation blocks of the dismantled railway ran along the shore *c*. 35 m seaward of the lower boundary of the shingle astride bedrock *c*. 1.0 m ACD. Sand-filled depressions and channels were a conspicuous feature, much of the sand being scoured away overwinter.



Zonation

Supralittoral (Maritime) zone

Lichen belt: the marina west breakwater root forming the eastern boundary of the monitoring site, the promenade wall backing the beach and the groyne *c*. 100 m west of the breakwater root were sparsely dusted with essentially terrestrial lichens as were the artificial structures at equivalent levels at the Roedean site. The top of the promenade wall, *c*. 11.4 m ACD, was taken as the convenient terrestrial-supralittoral transition (although the stable uppermost section of the beach adjacent to the breakwater root and for some 70 m westward in the vicinity of the promenade wall supported angiosperm vegetation, *c*. 9.0-8.4 m ACD, the lowest level occurring adjacent to the wall due to a local landward dip of the beach). The lowermost extension of lichen (*Caloplaca flavescens*) was recorded on the groyne *c*. 8.1 m ACD.

HW tidal debris (algae and other jetsam) deposited on the beach.

Littoral fringe

The west face of the marina west breakwater root and the groyne *c*. 100 m to the west provided stable substratum for littoral fringe organisms, belts of Cyanophyta (delineated by a dark film) and *Blidingia minima* (with small *Porphyra umbilicalis* scattered amongst the *Blidingia*) occurring as at Roedean. The upper limits of Cyanophyta and *B. minima* on the breakwater root averaged *c*. 9.0 and *c*. 6.7 m ACD respectively, and on the groyne *c*. 7.8 (sparse above *c*. 6.8) and *c*. 6.7 (sparse above *c*. 6.1) m ACD respectively.

Eulittoral zone

Divided into upper and lower belts of *Semibalanus balanoides* (with a sparse presence of *Austrominius modestus*) and *Mytilus edulis* respectively, the transition between the two occurring on artificial structures (west face of marina west breakwater root, groyne) *c*. 3.3 m ACD. The barnacle line varied between *c*. 5.8 m ACD (top of the steel piling that partly constituted the face of the breakwater root) and *c*. 5.6 m ACD (groyne where variably obscured/suppressed principally by downshore extension from the littoral fringe of *Blidingia minima* (*Fucus spiralis* sparse and stunted compared to that found at Roedean)). *Mytilus edulis* in the lower part of its range, *c*. 1.3-1.0 m ACD (storm-damaged terminal section of groyne, chalk platform), supported a healthy growth of *Palmaria palmata* and is herein referred to as the *Mytilus/Palmaria* belt.

Upper sublittoral zone (Sublittoral fringe)

A belt of *Laminaria saccharina c*. 1.0 m ACD downwards, much reduced overwinter.

SYSTEMATIC LIST

Phylum **PORIFERA**

Note. Members of this phylum were monitored March 1981-February 1985 at Roedean and May 1981-February 1985 at Kemp Town.

Class **CALCAREA**

Subclass **CALCARONEA**

Order LEUCOSOLENIDA

Family **LEUCOSOLENIIDAE**

Leucosolenia complicata (Montagu, 1814) [Burton, 1963: 159 (named form of *Leucosolenia botryoides* (Ellis & Solander)]

Roedean: small specimens on six occasions: on *Polysiphonia fucoides*, Rhodophyta belt, *c*. 1.0 m ACD, 19.7.81; on the underside of a flint cobble, *c*. 1.1 m ACD, 6.6.82; on *P. fucoides*, Rhodophyta belt, *c*. 1.2 m ACD, 12.5.83; with a heterogeneous rock scraping (including *Phymatolithon lenormandii*, *Ceramium* spp., *Dynamena pumila*), Rhodophyta belt, *c*. 1.2 m ACD, and on *Corallina officinalis*, Rhodophyta belt, *c*. 1.1 m ACD, 25.7.83; with a heterogeneous bedrock scraping (including *Gelidium pusillum*, *P. lenormandii, D. pumila*), Rhodophyta belt, *c*. 1.2 m ACD, 24.8.83; on the underside of a chalk cobble, *F. serratus* belt, *c*. 1.6 m ACD, and with a scraping dominated by *D. pumila* from a landward-facing concrete vertical (base of groyne), *c*. 1.3 m ACD (ALTL), as well as on *P. fucoides*, Rhodophyta belt, *c*. 1.2 m above CD, 10.9.84.

Family **SYCETTIDAE**

Sycon ciliatum (Fabricius, 1780) [Burton, 1963: 141, 370 as *Scypha ciliata*] Purse sponge

Roedean: small specimens on three occasions: with a heterogeneous scraping (including *Grantia compressa, Halichondria panicea, Hymeniacidon perlevis*, *Dynamena pumila*) from a concrete vertical (base of groyne), *c*. 0.8 m ACD, 5.5.81; on *Cladophora rupestris*, Rhodophyta-Laminaria transition, *c*. 0.7 m ACD, 17.8.81; on *Polysiphonia fucoides*, Rhodophyta belt, *c*. 0.8 m ACD, 26.5.83.

Kemp Town: small specimens on *Sertularella gaudichaudi*, concrete vertical (dismantled railway), *c*. 0.8 m ACD: 29.8.84; 24.10.84.

Family **GRANTIIDAE**

Grantia compressa (Fabricius, 1780) [Burton, 1963: 142, 442] Compressed purse sponge

Roedean: small specimens found frequently on algae (*Cladostephus spongiosus*, *Cladophora rupestris*, *Corallina officinalis, Plocamium cartilagineum, Ceramium* sp., *Halurus flosculosus*, *Laurencia pinnatifida, Polysiphonia fucoides*), variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.5-0.6 m ACD, no more than a few per occasion (except where indicated): 2.6.81; 28.9.81; 14.10.81; 11.1.82-8.4.82; 24.4.82 (locally fairly frequent *c*. 1.0-0.8 m ACD); 22.6.82; 6.8.82; 20.8.82; 4.9.82; 13.12.82; 28.12.82; 14.4.83; 8.9.83; 23.9.83; 18.11.83; 1.12.83; 15.2.84; 12.8.84. One small specimen with a heterogeneous scraping (including *Sycon ciliatum, Halichondria panicea, Hymeniacidon perlevis*, *Dynamena pumila*) from a concrete vertical (base of groyne), *c*. 0.8 m ACD,

5.5.81; another on *Sertularia argentea*, landward-facing concrete vertical (base of groyne), *c*. 1.3 m ACD (ALTL), 4.10.82.

Kemp Town: one small specimen on *Sertularia argentea*, downward-facing surface of concrete overhang (foundation block of dismantled railway), *c*. 0.9 m ACD, 18.1.84.

Class **DEMOSPONGIAE**

Subclass **HETEROSCLEROMORPHA**

Order SUBERITIDA

Family **SUBERITIDAE**

Suberites domuncula (Olivi, 1792) [Arndt, 1935: 39; Burton, 1953: 367]

Roedean: one yellow-orange specimen, firm to the touch, *c*. 75 mm maximum diameter, landward-facing bedrock vertical, *F. serratus* belt, *c*. 1.9 m ACD (MLWN), 20.11.82; a very sparing presence of similar specimens detected on overhanging bedrock surfaces, *c*. 1.9-0.6 m ACD, September 1983 to cessation of monitoring February 1985.

Kemp Town: one specimen, *c*. 60 mm maximum diameter, *Laminaria* belt, *c*. 0.6 m ACD, 29.3.83.

Family **HALICHONDRIIDAE**

Halichondria panicea (Pallas, 1766) [Arndt, 1935: 103] (WoRMS accepted subgenus assignment: *Halichondria (Halichondria) panicea*) Breadcrumb sponge

Roedean: common throughout the monitoring period. Found principally on vertical and downward-facing surfaces (bedrock, bases of groynes), *c*. 1.9 m ACD (MLWN) downwards, the most extensive incrustations occurring lowest on the shore.

Kemp Town: common on vertical and downward-facing surfaces (overhangs) of concrete/embedded flint blocks (dismantled railway), *c*. 1.0-0.7 m ACD, throughout the monitoring period.

Hymeniacidon perlevis (Montagu, 1814) [Arndt, 1935: 105 as *H. sanguinea*]

Roedean: common throughout the monitoring period. Similarly distributed to *Halichondria panicea*.

Kemp Town: scattered incrustations throughout the monitoring period. Distribution as for *H. panicea*.

Order POECILOSCLERIDA

Family **MICROCIONIDAE**

Clathria atrasanguinea (Bowerbank, 1862) [Lévi, 1960: 72 as *Microciona*] (WoRMS accepted subgenus assignment: *Clathria (Microciona) atrasanguinea*)

Roedean: not uncommon and recorded in all seasons throughout the monitoring period. Found principally on vertical and downward-facing surfaces (bedrock, bases of groynes), *c*. 1.3 m ACD (ALTL) downwards.

Kemp Town: scattered incrustations on vertical and downward-facing surfaces (overhangs) of concrete/embedded flint blocks (dismantled railway), *c*. 1.0-0.7 m ACD, throughout the monitoring period.

Phylum **CNIDARIA**

Class **SCYPHOZOA**

Order SEMAEOSTOMEAE

Family **PELAGIIDAE**

Chrysaora hysoscella (Linnaeus, 1767) [Russell, 1970: 87] Compass jellyfish

Roedean: a live specimen, umbrella diameter *c*. 10 cm, trapped in a pool, *c*. 1.3 m ACD (ALTL), 8.9.83.

Order RHIZOSTOMEAE

Family **RHIZOSTOMATIDAE**

Rhizostoma pulmo (Macri, 1778) [Hayward & Ryland, 2017: 69] Barrel jellyfish

Roedean: a stranded specimen, umbrella diameter *c*. 61 cm, 6.10.87.

Class **HYDROZOA**

Note. Members of this class were monitored March 1981-February 1985 at Roedean and May 1981-February 1985 at Kemp Town.

Order ANTHOATHECATA

Family **CORYNIDAE**

Coryne muscoides (Linnaeus, 1761) [Hincks, 1868: 41 as *C. vaginata*; Allman, 1871: 268 as *C. vaginata*]

Roedean: not uncommon, reaching maximum development July-September. Found mainly on algae (*Corallina officinalis, Ceramium sp., Halurus flosculosus, Polysiphonia fucoides, Rhodomela confervoides*) and rarely on other substrata (*Sertularia argentea*, chalk bedrock, concrete) in pools, variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.3-0.5 m ACD. Colonies up to *c*. 50 mm high.

Breeding: fertile colonies: July, September 1981; August - mid-October 1982; no records 1983; June (developing gonophores only), July, September 1984. Infertile colonies recorded in all seasons (overlooked March-June 1981).

Kemp Town: a single specimen devoid of polyps attached to *Polysiphonia fucoides*, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 30.11.82.

Family **EUDENDRIIDAE**

Eudendrium sp. [Allman, 1871: 330]

Roedean: a young colony, 2.5 mm high, with four polyps, collected with *Sertularia argentea* from a concrete vertical (base of groyne), the substratum to which originally attached uncertain, *c*. 0.7 m ACD, 8.2.85.

Kemp Town: a young colony, 2.0 mm high, with three polyps, collected with *S. argentea* from the downward-facing surface of a concrete overhang (foundation block of the dismantled railway), the substratum to which originally attached uncertain, *c*. 0.8 m ACD, 17.2.84.

Family **HYDRACTINIIDAE**

Clava multicornis (Forsskål, 1775) [Allman, 1871: 246]

Roedean: small colonies on three occasions: on chalk bedrock, Rhodophyta belt, *c*. 1.0 m ACD, 25.2.82; on *Phymatolithon lenormandii* in a pool, *F. vesiculosus-F. serratus* transition, *c*. 2.3 m ACD, 3.2.83; a single polyp with a scraping of *P. lenormandii, Laomedea flexuosa* and *Dynamena pumila* from the bedrock, the substratum to which originally attached uncertain, *F. vesiculosus* belt, *c*. 2.6 m ACD, 1.12.83.

Order LEPTOTHECATA

Family **CAMPANULARIIDAE**

Clytia hemisphaerica (Linnaeus, 1767) [Cornelius, 1982: 73; 1995 Part 2: 252]

Roedean: found sparingly on various substrata (*Cladostephus spongiosus, Corallina officinalis, Chylocladia verticillata, Ceramium* sp., *Polysiphonia fucoides, Rhodomela confervoides, Sertularia argentea*, base of small developing colony of the ascidian *Morchellium argus*, chalk on side of pool) in and at levels below the *F. serratus*-Rhodophyta transition, *c*. 1.3-0.6 m ACD: 26.4.83; 9.8.83; 24.8.83; 23.9.83; 7.10.83; 2.3.84; 1.4.84; 31.5.84; 12.6.84; 12.8.84; 10.9.84; 23.10.84; 20.11.84; 12.1.85. Also on drift weed: *Ceramium* sp. (epiphytic on *Chorda filum*), 19.9.81; *Laminaria hyperborea* holdfast, 15.12.81; *Polysiphonia* sp., 22.9.82; *Calliblepharis ciliata* and *Cryptopleura ramosa*, 22.12.82; *Calliblepharis ciliata* and its epiphyte *Ceramium* sp., 10.9.84; *Polysiphonia* sp., 6.12.84.

Kemp Town: small colonies on four occasions: on *Scinaia forcellata*, *Laminaria* belt, *c*. 0.6 m ACD, 19.9.82; with a scraping of *Bryopsis* sp. and *Kirchenpaueria pinnata* from a concrete vertical (dismantled railway), *c*. 0.9 m ACD, 13.6.84; on *Dynamena pumila* on the downward-facing surface of a concrete overhang (dismantled railway), c. 0.9 m ACD, 13.8.84; on small *Chondrus crispus* on a concrete vertical (dismantled railway), *c*. 0.7 m ACD, 27.9.84.

Breeding: fertile colonies recorded at Roedean only: on drift *Ceramium* sp., 19.9.81; on *Rhodomela confervoides*, *c*. 1.2 m ACD, 7.10.83; on *Corallina officinalis*, *c*. 1.0 m ACD, 12.6.84; on drift *Calliblepharis ciliata*, 10.9.84.

Gonothyraea loveni (Allman, 1859) [Cornelius, 1982: 92; 1995 Part 2: 262]

Roedean: specimens up to 10 mm high bearing developing gonophores, seaward-facing concrete vertical (groyne), *c*. 1.0 m ACD, 14.4.84.

Kemp Town: specimens up to 18 mm high bearing gonomedusae, seaward-facing concrete vertical (block detached from groyne), *c*. 1.2 m ACD, 9.4.82, and up to 11 mm high with frequent gonomedusae, concrete vertical (dismantled railway), *c*. 0.8 m ACD, 17.4.84.

Hartlaubella gelatinosa (Pallas, 1766) [Cornelius, 1982: 95; 1995 Part 2: 266]

Roedean: spring records only: undetected 1981 (probably overlooked); frequent 1982; infrequent 1983; scarce 1984; frequent 1985. Found mainly on the sides of shallow rock pools in areas prone to smothering by silt, and rarely in other habitats (aerially-exposed rock surfaces, the downward-facing surface of a concrete overhang (groyne)), variously distributed *c*. 1.3-0.7 m ACD: 8.4.82; 24.4.82; 6.5.82; 12.5.83; 14.5.84; 20.4.85. A single record on a stone in a pool, *c*. 2.0 m ACD, *F. serratus* belt, 6.5.82. Colonies up to 50 mm high.

Kemp Town: spring records only: undetected 1981 (monitoring initiated 19.5.81); not uncommon 1982, 1983, 1984; no records 1985 (regular monitoring discontinued February 1985); abundant 1986. Found on the sides of rock pools in sand-scoured areas and the surfaces of concrete/embedded flint blocks (dismantled railway), variously distributed *c*. 1.1-0.8 m ACD: 25.4.82; 14.5.83; 2.5.84; 25.4.86 (down to *c*. 0.5 m ACD). Colonies up to 60 mm high.

Ovingdean: frequent on the sides of pools in a predominantly bare rock area subjected to heavy siltation through the spring, *c*. 1.3-0.7 m ACD, 18.4.85. Colonies up to 40 mm high.

Breeding: fertile colonies: 25.4.82; 6.5.82; 12.5.83; 14.5.83; 2.5.84; 14.5.84; 25.4.86.

Laomedea flexuosa Alder, 1857 [Cornelius, 1982: 105; 1995 Part 2: 281]

Roedean: not uncommon on the bedrock (especially vertical and downward-facing surfaces (overhangs) and in hollows) attached directly to the chalk surface or creeping over epilithic *Phymatolithon lenormandii*, and very sparingly recorded on other substrata (*Corallina officinalis, Cryptosula pallasiana*, concrete vertical (base of groyne)), variously distributed in the *F. vesiculosus* and upper *F. serratus* belts, *c*. 3.1-1.8 m ACD, 8.12.81-4.1.85 (almost certainly overlooked March-November 1981), often in company with *Dynamena pumila* (49 % of *L. flexuosa* samples (n = 39) collected below *c*. 2.7 m ACD also included a proportion of *D. pumila*). Hydrocauli commonly up to 7-14 mm high; one sample up to 19 mm, 26.4.83.

Breeding: fertile colonies: April-July 1982; April, May, July, October 1983; April, May, October, November 1984. Infertile colonies recorded in all seasons (the species overlooked March-November 1981).

Obelia geniculata (Linnaeus, 1758) [Cornelius, 1975a: 272; 1995 Part 2: 301]

Roedean: sparing on *Laminaria saccharina* fronds, *c*. 0.6 m ACD (MLWS), 17.8.81. Three records on drift algae: on a fragment of *Halidrys siliquosa*, 6.7.82; conspicuous colonies, alive and bearing gonophores, hydrocauli up to 10 mm high, on frequent non-local *Fucus serratus*, 7.10.83; on *Cystoseira* sp., 29.11.84.

Kemp Town: not infrequent on *L. saccharina* fronds, a sample bearing occasional developing gonophores, hydrocauli up to 8.5 mm, *c*. 0.7-0.5 m ACD, 29.8.84.

Obelia longissima (Pallas, 1766) [Cornelius, 1995 Part 2: 304]

Two forms:

(1): ***O. longissima*** (Pallas, 1766) [Hincks, 1868: 154]

Roedean: detached specimens washed ashore: 24.4.82 (a fragment, 85 mm); 29.4.83 (a fertile colony, 160 mm, liberating medusae under the microscope the same day); 15.2.84 (a fragment, 20 mm); 16.4.84 (a single hydrocaulus, 95 mm).

(2): ***O. flabellata*** (Hincks, 1868) [Hincks, 1868: 157]

Roedean: infertile colonies on two occasions: hydrocauli up to 50 mm high, in company with *Hartlaubella gelatinosa* (dominant), on the downward-facing surface of a concrete overhang (groyne), *c*. 1.3 m ACD (ALTL), 14.5.84; a single hydrocaulus, 11 mm high, in company with *Kirchenpaueria pinnata,* on the downward-facing surface of a concrete overhang (groyne), *c*. 1.3 m ACD, and another solitary hydrocaulus, 24 mm high, on a concrete vertical (the same groyne), *c*. 1.0 m ACD, 12.6.84.

Kemp Town: locally frequent on two occasions: fertile colonies, hydrocauli up to 80 mm, on several neighbouring concrete/embedded flint blocks (dismantled railway), *c*. 1.0 m ACD, 24.5.82; infertile colonies, hydrocauli up to 60 mm, attached to concrete (mainly) and *Mytilus edulis* on the downward-facing surfaces of concrete/embedded flint blocks (dismantled railway), *c*. 0.7 m ACD, 15.5.84.

Orthopyxis integra (Macgillivray, 1842) [Cornelius, 1982: 60; 1995 Part 2: 235]

Roedean: infertile but usually thriving colonies sporadically recorded on red algae (*Corallina officinalis*, *Ceramium* sp., *Halurus flosculosus*, *Cryptopleura ramosa*, *Polysiphonia fucoides*, *Rhodomela confervoides*) and a single record epizoic on *Sertularia argentea*, variously distributed in the Rhodophyta and *Laminaria* belts, *c*. 1.1-0.6 m ACD: 15.9.81; 21.7.82; 29.11.82; 25.6.83; 25.7.83; 9.8.83; 23.9.83 (on *S. argentea*); 7.10.83; 1.4.84; 12.6.84; 23.10.84.

Ovingdean: a fertile colony (only three gonophores detected) extensively creeping over *Gracilaria verrucosa* and its epiphyte *Ceramium* sp., Rhodophyta-*Laminaria* transition, c. 0.7 m ACD, 28.9.84.

Family **HALECIIDAE**

Halecium halecinum (Linnaeus, 1758) [Cornelius, 1975b: 393; 1995 Part 1: 279] Herring-bone hydroid

Kemp Town: a detached fragment, 30 mm, on the strand-line, 25.1.82.

Halecium lankesterii (Bourne, 1890) [Hamond, 1957: 302; Cornelius, 1975b: 399; 1995 Part 1: 285 as *Halecium lankesteri*]

Roedean: found on three occasions: on *Schizomavella linearis* encrusting a flint cobble, Rhodophyta belt, *c*. 1.1 m ACD, 20.8.82; on *Corallina officinalis*, Rhodophyta belt, *c*. 1.2 m ACD, 12.8.84; with a scraping of *Sertularella gaudichaudi* and *Sertularia argentea* from a concrete vertical (base of groyne), the substratum to which originally attached uncertain, *c*. 0.5 m ACD, 26.9.84. Hydrocauli up to 5 mm high.

Kemp Town: found on seven occasions: on the underside of a flint cobble, *Laminaria* belt, *c*. 0.7 m ACD, 2.8.81; on vertical and downward-facing surfaces (overhangs) of concrete/embedded flint blocks (dismantled railway) attached direct to concrete and/or to other hydroids (*Dynamena pumila, Sertularella gaudichaudi*), *c*. 1.0-0.7 m ACD: 22.7.82; 1.11.82; 31.7.84; 13.8.84; 29.8.84; 11.9.84. Hydrocauli up to 15 mm high (a 12 mm female specimen with tendril development, on concrete vertical, *c*. 0.8 m ACD, 22.7.82).

Breeding: fertile colonies recorded July and August: 2.8.81 (female); 22.7.82 (female); 31.7.84 (female); 12.8.84 (male); 13.8.84 (female).

Family **SERTULARIIDAE**

Abietinaria abietina (Linnaeus, 1758) [Cornelius, 1979: 251; 1995 Part 2: 24]

Roedean: drift colonies bearing empty gonothecae, 22.2.82.

Dynamena pumila (Linnaeus, 1758) [Cornelius, 1979: 271; 1995 Part 2: 57]

Roedean: abundant throughout the period of investigation March 1981-February 1985 (and subsequently: checked 24.11.86, 4.11.87). Especially conspicuous on rock surfaces, *F. serratus* and chalk-encrusting *Phymatolithon lenormandii*, locally common on concrete groynes (vertical and downward-facing surfaces), and recorded on a variety of other mainly phytal substrata (*Laminaria digitata* (holdfasts), *F. vesiculosus, Corallina officinalis, Mastocarpus stellatus, Plocamium cartilagineum, Cystoclonium purpureum, Halurus flosculosus, Laurencia pinnatifida, Polysiphonia fucoides, Rhodomela confervoides, Sertularia argentea* (basally), *Cryptosula pallasiana*, underside of iron bar wedged in a channel), most significantly on *C. officinalis* (76 % of samples (n = 67) collected through the seasons March 1981-November 1984), variously distributed in the *F. vesiculosus*, *F. serratus* (predominantly) and Rhodophyta belts, *c*. 2.8-0.7 m ACD.

Recorded extending to various heights on *F. serratus* thalli, 4.11.87: commonly to 20-90 mm across the *F. serratus* belt, and to 220 mm on old abraded thalli towards the *F. serratus*-Rhodophyta transition; frequently to 100-150 mm on the increasingly scattered thalli across the Rhodophyta belt, and to 250 mm on an old abraded thallus towards the Rhodophyta-*Laminaria* transition.

Hydrocauli commonly up to 9-13 mm in height; specimens up to 23 mm recorded on a concrete groyne (vertical and downward-facing surfaces), *c*. 1.1-1.0 m ACD, 14.4.83, 14.4.84 and 31.5.84.

Kemp Town: very common throughout the period of investigation May 1981-February 1985 (and subsequently checked: 25.4.86, 4.11.87), but habitat restricted by the shingle beach overlying the chalk platform down to *c*. 1.3 m ACD (ALTL) and by extensive areas of mobile sand/scoured chalk at lower levels. Confined mainly to artificial structures (storm-damaged groyne, blocks detached from groyne, foundation blocks of dismantled railway) and sheltered situations in their vicinity, occurring principally on concrete (especially landward-facing verticals and overhangs), *Mytilus edulis* and scattered clumps of *F. serratus*, and sporadically on other substrata (*Palmaria palmata, Mastocarpus stellatus, Chondrus crispus*, *Polysiphonia fucoides, Sertularia argentea* (basally), sides and undersides of flint cobbles), variously distributed in *the Mytilus/Palmaria* and *Mytilus/Palmaria-Laminaria saccharina* transition, *c*. 1.3-0.7 m ACD. A single record of a small colony with a scraping of *Semibalanus balanoides* and small *Mytilus edulis* from steel piling (west face of marina west breakwater root), *c*. 1.6 m ACD, 11.1.85.

Hydrocauli commonly up to 10-15 mm high; specimens up to 16-22 mm, 9.4.82, 24.4.82, 23.6.82.

Breeding: fertile colonies: 26.4.81-1.8.81 (empty gonothecae 17.8.81, 18.8.81); 9.4.82-6.7.82 (empty gonothecae 22.7.82); 14.4.83-25.7.83; 14.4.84-12.7.84 (empty gonothecae 31.7.84, 13.8.84). Female acrocysts May-July. Infertile colonies recorded in all months, March 1981-February 1985.

Hydrallmania falcata (Linnaeus, 1758) [Cornelius, 1979: 273; 1995 Part 2: 60]

Roedean: detached colonies frequently washed ashore, but never found in large quantities: 2.11.81; 16.11.81; 11.1.82; 22.2.82; 24.4.82 (one specimen with several empty gonothecae); 6.5.82 (one or two specimens with several empty gonothecae); 20.11.82; 29.11.82; 4.12.82; 22.12.82; 11.2.83; 30.9.83;

28.10.83; 11.11.83; 18.11.83; 25.1.84; 29.1.84; 31.1.84; 15.2.84; 6.12.84. Colonies commonly up to 150-200 mm in height with the occasional specimen up to 300 mm, 2.11.81, 24.4.82 and a single specimen of 380 mm, 22.12.82.

Kemp Town: stranded colonies here and there: 15.11.81; 9.1.82; 9.4.82 (one specimen with several empty gonothecae); 30.11.82; 29.12.82; 13.1.83; 12.2.83; 17.2.83; 17.3.83; 21.11.84 (one specimen with a single empty gonotheca). Colonies up to *c*. 130 mm high.

Sertularella gaudichaudi (Lamouroux, 1824) [Hamond, 1957 figure 24: 316, as *S. mediterranea*; Cornelius, 1995 Part 2: 68]

Roedean: sparingly recorded on rock and concrete (bases of groynes) vertical and downward-facing surfaces (overhangs) variously distributed in and at levels below the *F. serratus*-Rhodophyta transition, *c*. 1.3 (ALTL)-0.5 m ACD: 1.8.81; 20.8.82; 8.9.83; 28.8.84; 26.9.84. A single specimen attached to *Polysiphonia fucoides*, Rhodophyta belt*, c*. 0.9 m ACD, 31.10.82. Hydrocauli up to 20 mm high.

Kemp Town: not infrequent, except 1983 when undetected, on vertical and downward-facing surfaces (overhangs) of concrete/embedded flint blocks (dismantled railway) situated astride the *Mytilus/Palmaria-Laminaria saccharina* transition, *c*. 1.0-0.7 m ACD: 2.8.81; 16.9.81; 23.6.82; 22.7.82; 21.8.82; 5.9.82; 31.7.84; 13.8.84; 29.8.84; 11.9.84; 27.9.84; 24.10.84. On chalk adjacent to one of the above blocks, *c*. 0.8 m ACD, 31.7.84. Hydrocauli up to 37 mm high.

Breeding: fertile colonies: August, September 1981; late June-September 1982; no records 1983; July-September 1984. Female acrocysts: 23.6.82; 13.8.84; 29.8.84; 26.9.84. Infertile colonies: August, October 1982; September 1983; August-October 1984.

Sertularella rugosa (Linnaeus, 1758) [Cornelius, 1979: 290; 1995 Part 2: 77]

Roedean: epizoic on drift *Flustra foliacea*: 6.1.82; 20.11.82; 22.12.82; 11.2.83; 11.11.83; 23.10.84; 6.12.84.

Kemp Town: epizoic on drift *F. foliacea*: 22.2.81; 14.11.82.

Sertularia argentea Linnaeus, 1758 [Hincks, 1868: 268; Cornelius, 1995 Part 2: 84] Squirrel's tail

Roedean: common on the foundations and collapsed sections of a fallen-into-disrepair concrete groyne which extended across the chalk platform down to *c*. 0.6 m ACD (MLWS), occurring on vertical and downward-facing surfaces (overhangs) up to 20-40 cm below the general level of the tops of the ridges of rock adjacent to the groyne and frequently immersed in standing water, variously distributed *c*. 1.4 (adjacent rock ridges *c*. 1.8)-0.4 m ACD (adjacent rock ridges *c*. 0.6 m ACD), throughout the monitoring period, March 1981-April 1985 (and subsequently: checked 17.9.85, 24.4.86, 19.12.87). Also recorded sporadically on the sides of small rock pools (mainly) and on aerially-exposed rock surfaces in the vicinity of the same groyne, *c*. 1.1-0.5 m ACD, mid-February-early June. A single record on an embedded flint protruding from the bedrock in a small pool, *c*. 0.9 m ACD, 24.1.82.

Detached specimens on the strand-line and variously strewn across the rocks, never found in large quantities: 6.1.82; 22.2.82; 6.5.82; 29.11.82; 22.12.82; 11.2.83; 11.11.83; 13.12.83; 15.2.84; 1.5.84; 6.12.84.

Colonies commonly up to 50-100 mm high across the intertidal range; specimens up to 140 mm recorded on a seaward-facing groyne vertical, *c*. 0.5 m ACD, 16.3.84. Detached specimens did not exceed 150 mm.

Kemp Town: not uncommon on downward-facing surfaces (overhangs) and occasional on verticals of concrete/embedded flint blocks (dismantled railway), *c*. 1.0-0.7 m ACD, throughout the monitoring period, May 1981-March 1985 (and subsequently: checked 25.4.86).

A scattering of detached specimens on the strand-line and across the shore: 25.4.82; 30.11.82; 29.12.82; 12.2.83; 17.2.83.

Colonies commonly up to 40-70 mm high and detached specimens the same.

Breeding: fertile colonies: March, May 1981; mid-January (developing gonophores only), March, April 1982; February-May 1983; mid-January (developing gonophores only), February-May, October (old colonies up to 100 mm, the basal one to two thirds of their stems devoid of branches, Roedean), November (empty gonothecae only, Roedean), 1984; February, April, 1985. Female acrocysts: March, April 1982; February, April 1983; February, April 1984; February, April 1985. Infertile colonies recorded in all seasons.

Sertularia cupressina Linnaeus, 1758 [Hincks, 1868: 270; Cornelius, 1995 Part 2: 88] Sea cypress

Kemp Town: a drift fragment, 200 mm long, 19.10.82.

Amphisbetia distans (Lamouroux, 1816) [Cornelius, 1979: 296 as *Sertularia distans*; 1995 Part 2: 108]

Roedean: small colonies, hydrocauli up to 6 mm high, epizoic on drift *Hydrallmania falcata*: 2.11.81; 29.11.82; 22.12.82; 25.1.84; 15.2.84; 6.12.84.

Kemp Town: a small growth, hydrocauli up to 4.5 mm high, on a drift *Laminaria saccharina* holdfast, 17.1.82.

Family **PLUMULARIIDAE**

Kirchenpaueria pinnata (Linnaeus, 1758) [Hincks, 1868: 295 as *Plumularia pinnata*; Cornelius, 1995 Part 2: 130]

Roedean: a common seasonal species, rare late April, rapid development May, maximal June, diminishing by early July and only small colonies sparingly recorded August-mid-January. Occurred mainly on bedrock and concrete (groynes, dismantled railway) vertical and downward-facing surfaces (overhangs) attached direct to these substrata or occasionally on intervening epilithic crustose growths (e.g. red alga *Phymatolithon lenormandii* and bryozoan *Cryptosula pallasiana*) in aerially-exposed situations and pools, sporadic records on other substrata (*Laminaria saccharina* (on abraded frond of old specimen), *Fucus serratus* germling, *Palmaria palmata, Corallina officinalis, Chondrus crispus, Polysiphonia fucoides* (basally), *Rhodomela confervoides*, sponge *Halichondria panicea*, bryozoan *Schizomavella linearis*), and rare on chalk and flint cobbles, variously distributed in the *F. vesiculosus* (rare small colonies), *F. serratus* (common), Rhodophyta (common) and *Laminaria* (rare) belts, *c*. 2.6-0.6 m ACD (scarce above *c*. 2.0 m ACD).

Colonies up to *c*. 40 mm high in May and June, less than 20 mm in other months.

Kemp Town: not uncommon May-early July, scarce August and September. Confined to vertical and downward-facing surfaces (overhangs) of concrete/embedded flint blocks (dismantled railway) attached direct to concrete and to *Halichondria panicea*, *c*. 1.0-0.8 m ACD.

Breeding: fertile colonies recorded mid-May-early October, maximal late May-June with densely packed gonophores on relatively large colonies, sparingly recorded at other times with less densely arranged gonophores on smaller colonies: June-August 1981; May-July, September (developing gonophores only), October 1982; May, June 1983; May, June, August, September, October (developing gonophores only), November (degenerating gonophores only on a small colony, Roedean), 1984. Infertile colonies:

May, July, August 1981; January, April, May, August, December 1982; August, October 1983; July-December 1984.

Plumularia obliqua (Johnston, 1847) [Hincks, 1868: 304; Cornelius, 1995 Part 2: 142]

Kemp Town: a single colony comprising 17 hydrocauli up to 4.5 mm high on a *Laminaria hyperborea* holdfast, strand-line, 25.1.82.

Nemertesia antennina (Linnaeus, 1758) [Hincks, 1868: 280 as *Antennularia antennina*; Cornelius, 1995 Part 2: 148] Sea beard, or lobster-horn hydroid

Roedean: several fragments up to *c*. 100 mm long (with similar fragments of *Nemertesia ramosa*) entangled in *Buccinum undatum* egg clusters, strand-line, 30.5.81.

Nemertesia ramosa Lamouroux, 1816 [Hincks, 1868: 282 as *Antennularia ramosa*; Cornelius, 1995 Part 2: 155]

Roedean: several fragments up to *c*. 100 mm long (with similar fragments of *N. antennina*) entangled in *Buccinum undatum* egg clusters, strand-line, 30.5.81; a single fragment caught in a tangled mass of material including *Calliblepharis ciliata, Abietinaria abietina, Hydrallmania falcata, Sertularia argentea* and *Amathia lendigera*, strand-line, 22.2.82.

Kemp Town: a single fragment entangled in a *Laminaria saccharina* holdfast, strand-line, 17.1.82.

Family **AGLAOPHENIIDAE**

Aglaophenia pluma (Linnaeus, 1758) [Hincks, 1868: 286; Cornelius, 1995 Part 2: 192]

Roedean: on drift algae: *Halidrys siliquosa*, 2.11.81; *Cystoseira* sp., 25.11.82; *H. siliquosa*, 29.11.82 (profuse colonies), 22.12.82, 15.9.83, 23.10.84 (dense growths with plumes up to 17 mm high), 29.11.84.

A single intertidal record on a later occasion, viz. a well-developed colony with plumes up to 16 mm high on a solitary *H. siliquosa* attached to an east-facing concrete vertical (groyne), *c*. 0.7 m ACD, 18.2.88, *H. siliquosa* otherwise found only as drift.

Kemp Town: on drift *H. siliquosa*, 29.12.82, 12.2.83.

Class **ANTHOZOA**

Subclass **HEXACORALLIA**

Order ACTINIARIA

Note. Members of this order were monitored March 1981-February 1985 at Roedean and May 1981-February1985 at Kemp Town.

Family **ACTINIIDAE**

Actinia equina (Linnaeus, 1758) [Manuel, 1981: 99] Beadlet anemone

Roedean: common on groynes, the foundation blocks of the dismantled railway and the bedrock throughout the monitoring period. Distributed *c*. 4.8 m ACD (MHWN = 5.1) downwards, being confined to groynes at levels above *c*. 3.2 m ACD due to the beach (predominantly shingle) overlying the upper part of the chalk platform down to *c*. 3.3 m ACD (MTL = 3.5).

Feeding: one specimen, 25 mm base diameter, with a partially ingested dead *Cancer pagurus*, 13 mm carapace breadth, under a stone, Rhodophyta belt, *c*. 1.0 m ACD, 27.10.81; another with a partially

ingested moribund *Sthenelais boa*, *c*. 100 mm long, in a small ridge-top pool, *F.vesiculosus* belt, *c*. 3.0 m ACD, 27.2.83.

Kemp Town: scattered but not uncommon throughout the monitoring period. Distributed *c*. 2.0 m ACD downwards, being confined to the groyne *c*. 100 m west of the marina west breakwater root at levels above c. 1.0 m ACD (the chalk platform overlain by the predominantly shingle beach down to *c*. 1.3 m ACD (ALTL)).

Actinia fragacea Tugwell, 1856 [Manuel, 1981: 101] Strawberry anemone

Roedean: occurred sparingly on the bedrock throughout the monitoring period. Distributed *c*. 2.9 m ACD downwards, rarely above *c*. 2.0 m ACD (MLWN = 1.9). Two specimens on a concrete vertical (base of groyne), *c*. 0.9 m ACD, 28.12.82.

Kemp Town: recorded on 10 occasions, variously distributed on the bedrock and artificial structures (storm-damaged groyne, dismantled railway), *c*. 1.2-0.4 m ACD: 3.6.81 (one); 16.9.81 (several); 8.2.82 (several); 9.4.82 (one); 25.4.82 (occasional); 29.12.82 (one); 27.4.83 (occasional); 27.5.83 (occasional); 17.3.84 (one); 31.7.84 (one).

Urticina felina (Linnaeus, 1761) [Manuel, 1981: 106] Dahlia anemone

Roedean: single specimens on three occasions on the bedrock: *c*. 0.7 m ACD, 29.4.83; *c*. 1.3 m ACD (ALTL), 3.11.83; *c*. 1.0 m ACD, 4.2.85.

Kemp Town: found on 10 occasions on the bedrock, variously distributed *c*. 1.0-0.4 m ACD: 22.7.82 (one); 19.9.82 (one); 28.2.83 (one); 17.3.83 (one); 29.3.83 (one); 27.5.83 (two); 17.2.84 (three); 17.3.84 (one); 17.4.84 (two); 15.5.84 (one). One on a concrete vertical (block of concrete near marina west breakwater root), *c*. 1.1 m ACD, 11.1.85.

Family **SAGARTIIDAE**

Sagartia elegans (Dalyell, 1848) [Manuel, 1981: 143]

Roedean: recorded on four occasions in old piddock burrows: *c*. 1.9 m ACD (MLWN), 13.12.82 (two), 26.5.83 (one) and 8.9.83 (one); *c*. 1.3 m ACD (ALTL), 29.6.84 (several).

Kemp Town: occurred commonly in old piddock burrows, save winter when very scarce, *c*. 1.0 m ACD downwards. Particularly conspicuous late May-early November 1983, their oral discs often protruding through sand thinly overlying the piddock-riddled bedrock.

Sagartia troglodytes (Price in Johnston, 1847) [Manuel, 1981: 146]

Roedean: found on six occasions under stones, variously distributed *c*. 2.4-0.7 m ACD: 8.4.82 (one); 23.5.82 (one); 28.3.83 (several); 17.1.84 (one); 31.1.84 (occasional); 1.4.82 (two). One on the open rock surface, its 20 mm diameter basal disc half inserted into an old piddock burrow, *c*. 2.3 m ACD, 15.2.84.

Kemp Town: found on five occasions under stones, variously distributed *c*. 1.0-0.7 m ACD: 10.3.82 (two); 26.3.82 (one); 24.5.82 (one); 17.2.83 (one); 17.2.84 (one).

Phylum **NEMERTEA**

Note. Members of this phylum were monitored January 1982-February 1985.

Class **ANOPLA**

Subclass **HETERONEMERTEA**

Family **LINEIDAE**

Siphonenteron bilineatum Meneghini in Renier, 1847 [Gibson, 1994: 89 as *Lineus bilineatus*]

Roedean: a single specimen, *c*. 100 mm long, on muddy sand under a chalk cobble, Rhodophyta belt, *c*. 1.2 m ACD, 11.2.83.

Lineus longissimus (Gunnerus, 1770) [Gibson, 1994: 92] Bootlace worm

Ovingdean: a single specimen, at least 4 m long, under a large chalk cobble riddled with old piddock burrows set amidst a stable low water cobble bed (predominantly flint and supporting *Laminaria saccharina*), the animal partly insinuated into several of the burrows which opened onto the underside of the cobble, *c*. 0.6 m ACD (MLWS), 28.9.84.

Lineus ruber (Müller, 1774) [Gibson, 1994: 96]

Roedean: found on five occasions: three, *c*. 30-40 mm long, on muddy sand under a chalk cobble, *F. vesiculosus* belt, *c*. 2.6 m ACD, 7.2.82, and three, *c*. 10-15 mm long, similarly situated, 6.5.82; one, *c*. 15 mm long, on the chalk bedrock under a recumbent *F. serratus* frond, *F. serratus* belt, *c*. 1.9 m ACD (MLWN), 12.1.83; one, *c*. 15 mm long, on sand under a chalk cobble, *F. serratus* belt, *c*. 1.9 m ACD, 15.3.83; three, *c*. 35-50 mm long, on the underside of a chalk cobble, the cobble overlying a pocket of muddy sand, *F. serratus* belt, *c*. 1.9 m ACD, 6.12.84.

Lineus viridis (Müller, 1774) [Gibson, 1994: 100]

Roedean: found on three occasions: one, *c*. 80 mm long, under a flint cobble, *F. serratus* belt, *c*. 1.9 m ACD, 23.5.82; one, *c*. 60 mm long, on the underside of a flint cobble, *F. vesiculosus* belt, *c*. 3.0 m ACD, 28.3.83; two, *c*. 80 and *c*. 110 mm long, on detrital sandy sediment coating the chalk bedrock, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 17.5.84.

Class **ENOPLA**

Subclass **HOPLONEMERTEA**

Superorder MONOSTILIFERA

Family **OERSTEDIIDAE**

Oerstedia dorsalis (Abildgaard, 1806) [Gibson, 1994: 177]

Roedean: a few records 1982 and 1983, then quite frequently recorded 1984 through to February 1985. Found in various habitats (*Corallina officinalis, Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *Sertularia argentea*, and the rarely recorded bryozoan *Amathia citrina*) variously distributed *c*. 1.6-0.5 m ACD: 24.4.82; 22.6.82; 21.7.82; 3.2.83; 28.3.83; 8.9.83; 1.12.83-14.5.84; 26.9.84-8.2.85. Never more than a few per habitat sample.

Kemp Town: found very sparingly amongst algae (*Polysiphonia nigra, P. fucoides* (supporting epiphytic *Ceramium* sp.) and hydroids (*Hartlaubella gelatinosa, Obelia longissima, Sertularella gaudichaudi*,

Sertularia argentea), variously distributed *c*. 1.1-0.7 m ACD: 22.7.82; 19.9.82; 14.5.83; 27.5.83; 12.6.83; 2.5.84-31.7.84; 27.9.84. Single specimens per sample.

Family **PROSORHOCHMIDAE**

Prosorhochmus claparedii Keferstein 1862 [Gibson, 1994: 151]

Roedean: a chance encounter prior to the regular monitoring period: a ripe female, *c*. 30 mm long, in a crevice in the east face of a groyne, the concrete/protruding flint substrate adjacent to the crevice supporting *Blidingia minima*, *c*. 5.2 m ACD (MHWN = 5.1), 19.7.81. The animal had given birth to a single juvenile, *c*. 4 mm long, in the specimen tube, when examined on the day of collection, presumably the result of handling when placing it in the tube; *c*. 14 young could be seen through the body wall.

Family **TETRASTEMMATIDAE**

Tetrastemma melanocephalum (Johnston, 1837) [Gibson, 1994: 168]

Roedean: found on four occasions: one, *c*. 5 mm long, amongst barnacles (groyne), *c*. 1.9 m ACD (MLWN), 31.10.82; one, *c*. 20 mm long, amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *F. serratus* belt, *c*. 1.7 m ACD, 12.1.83; one in a heterogeneous rock scraping (including *Gelidium pusillum, Phymatolithon lenormandii, Dynamena pumila*) from beneath recumbent *F. serratus* fronds, Rhodophyta belt, *c*.1.2 m ACD, 24.8.83; one amongst barnacles (groyne), *c*. 1.5 m ACD, and another, *c*. 4 mm long, in a scraping of barnacles and small algal growths including *Ceramium* sp. (another groyne), *c*. 1.1 m ACD, 10.10.84.

Kemp Town: two, *c*. 2-3 mm long, amongst barnacles encrusting steel piling (west face of marina west breakwater root), *c*. 1.6 m ACD, 11.1.85.

Tetrastemma vermiculus (Quatrefages, 1846) [Gibson, 1994: 175]

Roedean: found sparingly amongst algae (Ectocarpales indet., *Halurus flosculosus*, *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.)), mostly on *P. fucoides*, variously distributed in the Rhodophyta belt, *c*. 1.2-0.8 m ACD: 29.11.82; 11.2.83; 27.2.83; 12.5.83; 26.5.83; 21.10.83; 15.2.84; 12.6.84-12.8.84; 20.11.84. Number per sample of *P. fucoides* (supporting epiphytic *Ceramium* sp.), one to a few, and in other algal samples, single specimens. Single specimens twice on *Sertularia argentea* on the same fallen-into-disrepair concrete groyne (basally): *c*. 0.6 m ACD (MLWS), 24.4.82; *c*. 0.5 m ACD, 14.5.84.

Kemp Town: found on three occasions amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.): a single specimen, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 7.8.82; a single specimen, *c*. 0.8 m ACD, 29.12.82; several specimens, *c*. 0.9 m ACD, 15.5.84. Also, a single specimen amongst Ectocarpales indet., *c*. 0.8 m ACD, 15.5.84.

Phylum **ANNELIDA**

Class **POLYCHAETA** Bristleworms

Note. Members of this class were monitored January 1982-February 1985, but additionally presented are a number of records falling outside this period e.g. the various species (*Glycera tridactyla, Nephtys hombergii, Phyllodoce maculata, Arenicola marina, Scolelepis* (*Scolelepis*) *squamata, Spiophanes bombyx*) inhabiting the sand at Kemp Town to the west of the regularly monitored rocky area, the sand having been examined for infauna only in March and April 1985.

Subclass **ERRANTIA** (= **ACICULATA**)

Order PHYLLODOCIDA Scaleworms

Family **POLYNOIDAE**

Gattyana cirrhosa (Pallas, 1766) [Fauvel, 1923: 49]

Roedean: single specimens on three occasions: under a stone, *c*. 1.0 m ACD, 25.3.82 and 14.4.83; in a crevice in a rock vertical, *c*. 1.1 m ACD, 24.8.83.

Kemp Town: found on seven occasions variously distributed *c*. 1.1-0.8 m ACD (single specimens under stones except where indicated): 9.4.82; 24.5.82 (one amongst *Mytilus edulis*, *c*. 1.0 m ACD); 23.6.82; 30.11.82; 15.4.83 (one *Neoamphitrite figulus* (q.v.) in its mud tube under the same stone, *c*. 1.1 m ACD); 13.6.84; 31.7.84 (two small specimens with a scraping of ascidians (*Morchellium argus* and *Molgula cf. socialis*) from a concrete vertical (dismantled railway), *c*. 0.9 m ACD).

Harmothoe imbricata (Linnaeus, 1767) [Fauvel, 1923: 55]

Roedean: single specimens on five occasions under stones variously distributed *c*. 2.5-0.9 m ACD: 11.6.83; 25.6.83; 8.9.83; 1.12.83; 12.8.84.

Kemp Town: found on four occasions under stones variously distributed *c*. 1.1-0.7 m ACD: 21.8.82 (one); 28.2.83 (two, each under a separate stone); 17.3.84 (one); 11.9.84 (one).

Harmothoe impar (Johnston, 1839) [Fauvel, 1923: 59]

Roedean: single specimens on seven occasions: amongst *Corallina officinalis*, *c*. 1.1 m ACD, 8.4.82; under a stone, *c*. 1.0 m ACD, 21.7.82; in a rock crevice, *c*. 1.1 m ACD, 24.8.83; with *Plocamium cartilagineum* sampled from a groyne base, *c*. 0.8 m ACD, 7.10.83; under a stone, *c*. 1.3 m ACD (ALTL), 3.11.83; with a scraping containing bryozoans *Bugulina turbinata* and *Schizomavella linearis* from the downward-facing surface of a rock overhang, *c*. 1.3 m ACD, 28.8.84; under a stone, *c*. 1.6 m ACD, 10.9.84.

Kemp Town: found on five occasions (single specimens except where indicated): under a stone, *c*. 1.1 m ACD, 26.2.82 and 12.2.83, and likewise, *c*. 1.0 m ACD, 17.2.84; with a scraping of *Bryopsis* sp. (a little), *Gonothyraea loveni* and *Botryllus schlosseri* from a concrete vertical (dismantled railway), *c*. 0.8 m ACD, 17.4.84; with a scraping of ascidians (*Morchellium argus* and *Molgula cf. socialis*) from a concrete vertical (dismantled railway), *c*. 0.9 m ACD, 31.7.84 (three small specimens).

Ovingdean: one amongst *Spirobranchus* tubes on the underside of a flint cobble, *Laminaria* belt, *c*. 0.6 m ACD (MLWS), 16.4.84.

Lepidonotus squamatus (Linnaeus, 1758) [Fauvel, 1923: 45]

Roedean: one on the underside of a chalk cobble, *c*. 0.9 m ACD, 28.3.83.

Kemp Town: single specimens collected twice from the downward-facing surface of a concrete overhang (dismantled railway), *c*. 0.9 m ACD: amongst *Sertularia argentea*, 29.12.82; with a scraping of *Halichondria panicea, Dynamena pumila* and *Sertularella gaudichaudi*, 13.8.84.

Family **SIGALIONIDAE**

Sthenelais boa (Johnston, 1833) [Fauvel, 1923: 110]

Roedean: single specimens on four occasions: in muddy sand under a flint cobble, *c*. 0.9 m ACD, 6.5.82; partially ingested by an *Actinia equina* in a small ridge-top pool, *c*. 3.0 m ACD, 27.2.83 (a moribund individual, *c*. 100 mm long); in muddy sand under a flint cobble, *c*. 1.0 m ACD, 1.5.84; in an old piddock burrow in the underside of a chalk cobble, the cobble embedded in a pocket of sand, *c*. 0.5 m ACD, 10.3.85.

Kemp Town: single specimens found twice under stones (flint cobbles): *c*. 0.9 m ACD, 23.6.82; *c*. 0.6 m ACD, 27.9.84 (on sand).

Family **HESIONIDAE**

Psamathe fusca Johnston, 1836 [Fauvel, 1923: 238 as *Kefersteinia cirrata* (Keferstein); O'Connor & Shin, 1983: 356 with comments on the features which separate *Hesiospina similis* (Hessle) from *K. cirrata*] – The name *H. similis* (Hessle) now superseded by *H. aurantiaca* (M. Sars). *H. aurantiaca* undetected.

Roedean: found on sand under stones (flint and chalk cobbles), variously distributed *c*. 1.9 (MLWN)-0.5 m ACD: 25.2.82; 15.10.82; 11.2.83-12.5.83; 8.9.83; 7.10.83; 21.10.83; 31.1.84; 2.3.84; 16.3.84; 1.4.84; 20.11.84; 6.12.84; 19.12.84. One-a few per occasion save 16.3.84 and 1.4.84 when frequent. Number under individual stones, 1-5.

Kemp Town: three on muddy sand under a flint cobble, *c*. 1.0 m ACD, 29.12.82.

Family **NEREIDIDAE**

Nereis pelagica Linnaeus, 1758 [Fauvel, 1923: 336]

Roedean: single specimens on four occasions: on sand under a stone, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, 18.9.82; between stones in a channel, *c*. 1.3 m ACD, 28.3.83; with a scraping of *Halichondria panicea*, *Hymeniacidon perlevis* and *Dynamena pumila* from a downward-facing surface of a concrete overhang (groyne), *c*. 1.1 m ACD, 12.1.85; amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 1.3 m ACD, 18.1.85.

Kemp Town: found on seven occasions variously distributed *c*. 1.1-0.5 m ACD (single specimens under stones except where indicated): 9.1.82; 25.4.82; 24.5.82; 23.6.82 (one amongst *Dynamena pumila* at the entrance to a crevice in a concrete vertical (dismantled railway), *c*. 1.0 m ACD); 21.8.82; 26.6.83 (one amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 1.1 m ACD); 29.8.84 (two with a scraping of small mussels and *Molgula cf. socialis* from a concrete vertical (dismantled railway), *c*. 0.8 m ACD).

Perinereis cultrifera (Grube, 1840) [Fauvel, 1923: 352]

Roedean: found frequently in muddy sand accumulations under chalk and flint cobbles (especially the former, many of which were riddled with old piddock burrows, the worms often partially inserted into the sediment-filled burrows which opened onto their undersides, and into which they attempted to withdraw, successfully or otherwise on disturbance) variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c.* 1.9 (MLWN)-0.5 m ACD: 24.1.82; 9.3.82; 25.3.82; 23.5.82; 22.6.82; 11.2.83-12.5.83; 10.7.83; 18.11.83; 31.1.84; 15.2.84; 1.4.84; 1.5.84; 30.7.84-6.12.84. One record at a higher shore level, viz. a single specimen in muddy sand under a chalk cobble, *F. vesiculosus* belt, *c*. 2.7 m ACD, 30.12.83.

Two records, probably the result of cobble disturbance by heavy seas: a moribund individual, *c*. 160 mm long, under a recumbent *F. serratus* frond, *c*. 1.3 m ACD, 23.9.83; another specimen, *c*. 50 mm long, wriggling in a pool, c. 2.0 m ACD, 23.10.84.

The number of worms noted per occasion, one to a few, save 25.3.82, 15.3.83 and 28.3.83 when moderate numbers were found.

Platynereis dumerilii (Audouin & Milne Edwards, 1833) [Fauvel, 1923: 359]

Roedean: found frequently September 1983-January 1985, only a few records previously (probably under-recorded). Occurred mainly amongst algae (Ectocarpales indet., *Cladophora sericea*, *Corallina officinalis* and predominantly *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.)), and rarely amongst hydroids (*Dynamena pumila*, *Sertularia argentea*), variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.0-0.5 m ACD, chiefly in and at levels below the *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL): 24.4.82; 6.5.82; 21.7.82; 14.4.83; 26.5.83; 8.9.83-29.6.84; 28.8.84; 10.9.84; 7.11.84-12.1.85. The majority of specimens were less than 10 mm long. The largest individual, *c*. 30 mm long, occurred amongst *Polysiphonia fucoides*, Rhodophyta belt, *c*. 1.1 m ACD, 29.6.84.

Number per sample of alga, one to a few, mostly single individuals, save once, when tiny specimens ranging from 0.56 mm long (four chaetigers) to 1.8 mm long (16 chaetigers) were found amongst diatom-coated *Cladophora sericea*, *c*. 0.6 m ACD (MLWS), 28.8.84. Single specimens in hydroid samples.

Kemp Town: single specimens found twice in the *Laminaria* belt: one, 7 mm long, amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 0.9 m ACD, 15.5.84; one, 35 mm long, on *Chondrus crispus*, c. 0.5 m ACD, 27.9.84.

Family **SYLLIDAE**

Proceraea picta Ehlers, 1864 [Fauvel, 1923: 315 as *Autolytus pictus*; Day, 1967: 284 as *A. pictus*]

Roedean: regularly associated with infrequently sampled sponges (*Halichondria panicea, Hymeniacidon perlevis*) variously scraped from the chalk bedrock and groynes, *c*. 1.6-0.6 m ACD: 25.2.82; 8.4.82; 20.8.82; 13.12.82; 27.2.83; 12.5.83; 11.6.83; 24.8.83; 7.10.83; 1.5.84; 14.5.84; 10.9.84; 7.11.84; 12.1.85. Number per sample, 1-2.

Breeding: a specimen budding a chain of stolons, 12.5.83; a pale green male stolon (polybostrichus), provisionally assigned *P. picta*, with a scraping composed mainly of *Hymeniacidon perlevis* and *Dynamena pumila* from a concrete vertical (groyne), *c*. 0.9 m ACD, 8.4.82.

Kemp Town: associated with sponges (*Halichondria panicea, Hymeniacidon perlevis*) variously scraped from vertical and downward-facing surfaces (overhangs) of concrete/embedded flint blocks

(dismantled railway), *c*. 1.0-0.7 m ACD: 8.2.82; 23.6.82; 14.5.83; 13.8.84; 27.9.84. Number per sample, 1-2.

Breeding: a specimen budding a chain of stolons, 23.6.82; single pale green male stolons (polybostrichus), provisionally assigned *P. picta*, on three occasions: with a scraping composed mainly of *Halichondria panicea* and *Dynamena pumila* from the sides and underside of a flint cobble, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 9.4.82; with a scraping of *Hymeniacidon perlevis* and *Dynamena pumila* from a concrete vertical (dismantled railway), *c*. 0.7 m ACD, 14.5.83; with a scraping of *Halichondria panicea, Dynamena pumila*, *Kirchenpaueria pinnata* and *Botrylloides leachii* from a concrete vertical (dismantled railway), *c*. 0.9 m ACD, 13.6.84.

Eusyllis blomstrandi Malmgren, 1867 [Fauvel, 1923: 293; Day, 1967: 266]

Roedean: occurred sparingly amongst algae (*Chondrus crispus, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides, Rhodomela confervoides*) and hydroids (*Laomedea flexuosa, Dynamena pumila, Sertularella gaudichaudi, Sertularia argentea*), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.6-0.5 m ACD, chiefly in and at levels below the *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL): 9.3.82; 25.3.82; 28.12.82; 28.3.83; 18.11.83; 1.12.83; 1.4.84; 14.4.84; 31.5.84; 10.9.84; 26.9.84; 23.10.84; 20.11.84; 12.1.85; 18.1.85; 8.2.85. Number per sample of alga, 1-2, and per sample of hydroid, 1-several.

Kemp Town: found three times on *Polysiphonia fucoides* (twice supporting epiphytic *Ceramium* sp.) and occasionally on hydroids (*Dynamena pumila, Sertularella gaudichaudi, Sertularia argentea*), variously distributed in and at levels below the *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0-0.7 m ACD: 5.9.82; 29.12.82; 31.7.84; 13.8.84; 29.8.84; 11.9.84; 27.9.84; 9.2.85. Number per sample, 1-2, save once when eight or more were found in their tubes on *Sertularella gaudichaudi* on a concrete vertical (dismantled railway), *c*. 0.8 m ACD, 29.8.84.

Ovingdean: single specimens found twice: one amongst *Spirobranchus* tubes on the underside of a flint cobble, *Laminaria* belt, *c*. 0.6 m ACD, 16.4.84; the other on *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 28.9.84.

Exogone naidina Örsted, 1845 [Fauvel, 1923: 305 as *E. gemmifera*; Day, 1967: 274 as *E. gemmifera*]

Roedean: found quite frequently September 1983-February 1985, only two records previously (probably under-recorded). Occurred amongst algae (Ectocarpales indet., *Bryopsis* sp., *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.) and hydroids (*Dynamena pumila, Sertularia argentea*), variously distributed in and at levels below the *F. serratus*-Rhodophyta transition, *c*. 1.3-0.5 m ACD: 24.4.82; 26.4.83; 23.9.83; 21.10.83; 3.11.83; 1.12.83; 15.2.84; 2.3.84; 14.4.84; 1.5.84; 31.5.84; 12.6.84; 12.8.84; 10.9.84; 6.12.84; 8.2.85. Number per sample of alga, 1-3, and per sample of hydroid, 1-2.

Breeding: a female bearing 26 embryos amongst *Dynamena pumila* on the downward-facing surface of a concrete overhang (groyne), *c*. 1.1 m ACD, 31.5.84.

Kemp Town: a single specimen amongst *D. pumila*, concrete vertical (dismantled railway), *c*. 0.8 m ACD, 9.4.82.

Syllis gracilis Grube, 1840 [Fauvel, 1923: 259; Day, 1967: 241]

Roedean: single specimens on five occasions: amongst *Corallina officinalis*, *c*. 2.3 m ACD, 25.3.82, and *c*. 1.0 m ACD, 8.4.82; with *Suberites domuncula*, landward-facing rock vertical, *c*. 1.9 m ACD (MLWN), 20.11.82; with a scraping composed mainly of *Hymeniacidon perlevis* and containing a little *Bryopsis*

sp., *Dynamena pumila* and *Morchellium argus* from a concrete vertical (groyne), *c*. 1.0 m ACD, 11.6.83; with a scraping of *D. pumila* and *M. argus* from a rock vertical, *c*. 1.2 m ACD, 2.3.84.

Kemp Town: single specimens on three occasions: amongst *Dynamena pumila* at the entrance to a crevice in a concrete vertical (dismantled railway), *c*. 1.0 m ACD, 23.6.82; amongst *Sertularia argentea* suspended from the underside of a concrete overhang (dismantled railway), *c*. 0.9 m ACD, 29.12.82; with *Halichondria panicea* scraped from a concrete vertical (dismantled railway), *c*. 0.8 m ACD, 27.5.83.

Syllis sp.

Roedean: a single specimen, *c*. 7 mm long, amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 0.7 m ACD, 8.9.83.

Family **GLYCERIDAE** Bloodworms

Glycera tridactyla Schmarda, 1861 [O'Connor, 1987: 173]

Roedean: one, *c*. 35 mm long, on muddy sand under a chalk cobble, *c*. 1.9 m ACD (MLWN), 6.12.84.

Kemp Town: one, *c*. 50 mm long, and another, *c*. 80 mm long, in sand to the west of the regularly monitored rocky area, *c*. 1.2 m ACD, 10.3.85 (both in the same fork-full of sand with three *Nephtys hombergii*, four *Arenicola marina* and one *Spiophanes bombyx*).

Glycera lapidum Quatrefages, 1866 [O'Connor, 1987: 184]

Roedean: one, *c*. 30 mm long, lashing about on the surface of a small pool, *c*. 0.6 m ACD (MLWS), the bedrock giving way to sand in the immediate downshore vicinity, 9.3.82; another *c*. 15 mm long, under a chalk cobble, *c*. 1.3 m ACD (ALTL), 20.11.84.

Family **NEPHTYIDAE** Catworms

Nephtys hombergii Savigny in Lamarck, 1818 [Rainer, 1984: 899-901; 1989: 876]

Kemp Town: common in sand to the west of the regularly monitored rocky area, *c*. 1.2-0.6 m ACD (the lowest level examined), 10.3.85 and 6.4.85, the only two occasions on which the infauna of the sand at this locality was investigated (lower boundary of the shingle beach *c*. 1.4-1.3 m ACD).

Family **SPHAERODORIDAE**

Sphaerodoridium minutum (Webster & Benedict, 1887) [Southern, 1914: 90 as *Sphaerodorum minutum*; Fauvel, 1923: 380 as *Sphaerodorum minutum*]

Roedean: single specimens found five times: amongst *Polysiphonia fucoides*, *c*. 0.8 m ACD, 25.2.82 and 23.5.82; with a scraping of *Semibalanus balanoides* and young *Molgula cf. socialis* from a groyne (collapsed section), *c.* 1.1 m ACD, and on the same occasion with a heterogeneous scraping (*Cladostephus spongiosus*, *Fucus* germlings, *Phymatolithon lenormandii*, *Dynamena pumila*, *Cryptosula pallasiana*) from the bedrock, *c*. 1.1 m ACD, 1.12.83; amongst *Corallina officinalis*, *c*. 0.8 m ACD, 1.4.84.

Kemp Town: one amongst *Dynamena pumila* on the underside of a flint cobble, *c*. 0.9 m ACD, 25.4.82.

Family **PHYLLODOCIDAE** Paddle worms

Mysta picta (Quatrefages, 1866) [Fauvel, 1923: 176 as *Eteone* (*Mysta*) *picta*]

Kemp Town: numerous specimens averaging *c*. 50-60 mm long, including females full of ova, swimming at/near the surface over a sandy seabed to the west of the regularly monitored rocky area at the beginning of flood-tide (LW *c*. 1.1 m ACD), 0815-0830 BST, 11.7.82 (full moon 6.7.82). Duration of swarming behaviour unknown as observation was restricted to the 15 minutes indicated. The swarm extended at least 50 m alongshore, and from near the water's edge (depth *c*. 1 m +) an undetermined distance seawards (20 m +). Density up to five or a few more per sq. m.

Phyllodoce maculata (Linnaeus, 1767) [Fauvel, 1923: 152 as *Anaitides maculata*]

Roedean: found sparingly in a variety of habitats (amongst *Gelidium pusillum*, *Sabellaria* tubes and barnacles; on a dead *Carcinus maenas*; under stones), mainly the latter, variously distributed in and at levels below the *F. vesiculosus* belt, *c*. 2.7-0.6 m ACD: 24.1.82; 9.3.82; 25.3.82; 21.7.82 (a 3 mm long juvenile, the smallest specimen found and the only summer record, with a rock scraping of detrital sandy sediment partially bound by *Polydora ciliata* chimneys, *c*. 0.8 m ACD); 31.10.82; 14.4.83; 18.11.83; 17.12.83; 31.1.84; 15.2.84; 2.3.84; 29.3.84; 14.4.84; 12.1.85; 8.2.85. One to a few per occasion, mostly single specimens. Only once were specimens found exceeding 50 mm in length, viz. two, *c*. 70 mm long, on muddy sand under a chalk cobble riddled with old piddock borings, *c*. 1.3 m ACD (ALTL), 14.4.83.

Kemp Town: five records only: one small specimen in a sandy detrital rock scraping composed mainly of tightly packed *Polydora ciliata* chimneys, *c*. 0.7 m ACD, 5.10.82; one, *c*. 25 mm long, amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 0.6 m ACD (MLWS), 29.3.83; one, *c*. 50 mm long, amongst *Sabellaria* tubes on the underside of a flint cobble, *c*. 0.5 m ACD, 17.3.84; a small specimen amongst barnacles encrusting a groyne, *c*. 1.3 m ACD, 8.10.84; one, *c*. 100 mm long, the largest specimen recorded, in sand to the west of the regularly monitored rocky area, *c*. 0.8 m ACD, 6.4.85 (two *Scolelepis* (*Scolelepis*) *sqamata* and a moderate number of *Spiophanes bombyx* in the same fork-full of sand).

Breeding: single specimens containing ova recorded 17.3.84 (Kemp Town) and 29.3.84 (Roedean). The gelatinous masses of green eggs found attached to algae, stones and the bedrock February-June and attributed to *Eulalia viridis* (q.v.) may have included this species.

Phyllodoce laminosa Savigny in Lamarck, 1818 [Fauvel, 1923: 145]

Roedean: three specimens, *c*. 250 m east of the regularly monitored stretch of shore, each under a large chalk cobble riddled with old piddock burrows set amidst a stable low water cobble bed (predominantly flint and supporting *Laminaria saccharina*), *c*. 0.7 m ACD, 28.9.84. All three were of similar size, the one sampled measuring *c*. 410 mm long.

Kemp Town: one, *c*. 410 mm long, under a brick, *c*. 0.7 m ACD, 17.3.84. Extruded green ova on collection.

Ovingdean: one, *c*. 370 mm long, similarly situated to the Roedean specimens under a chalk cobble amidst a stable low water cobble bed (predominantly flint), *c*. 0.7 m ACD, 16.2.84. Extruded green ova on collection.

Eulalia viridis (Linnaeus, 1767) [Fauvel, 1923: 160]

Roedean: 1982-1984: found in all seasons, but noted as common or frequent only in May (1983, 1984) and June (1982, 1983), otherwise occasional or rare. Encountered on damp rock faces *c*. 2.7 m ACD downwards. Four records at higher shore levels (single specimens except where indicated): under a stone, *F. vesiculosus* belt, *c*. 2.8 m ACD, 23.5.82 and 30.12.83; amongst barnacles encrusting a groyne vertical (concrete with embedded flints), *c*. 3.5 m ACD (MTL), 2.8.83 and 31.8.83 (two specimens).

Kemp Town: 1982-1984: regularly observed amongst barnacles and mussels on the groyne (concrete with embedded flints) *c*. 100 m west of the marina west breakwater root, *c*. 3.3-1.3 m ACD, chiefly on vertical faces above *c*. 2.0 m ACD, being noted as common or frequent in May, July, October, November 1982; June 1983; May, June, November 1984, otherwise occasional or rare. A single specimen amongst barnacles, groyne vertical, *c*. 4.1 m ACD, 17.4.84.

Rarely evident at lower shore levels (despite the conspicuous presence of egg masses, presumably produced by this species, late February to May): occasional specimens crawling over *Halichondria panicea* and amongst *Dynamena pumila* and mussels on concrete verticals (dismantled railway), *c*. 1.0-0.9 m ACD, 23.6.82; one on the downward-facing surface of a concrete overhang (dismantled railway), c. 0.7 m ACD, 29.3.83; occasional specimens on concrete blocks (detached from groyne) and on nearby bedrock, the latter coated with detrital sandy sediment, c. 1.2-1.0 m ACD, 27.5.83.

Breeding: gelatinous masses of green eggs, up to *c*. 10 mm long and rather less broad, presumably *E. viridis* (possibly including *Phyllodoce maculata* (q.v.)), recorded late February- mid-June:

Roedean: variously attached to algae (e.g. *Corallina officinalis, Cystoclonium purpureum, Polysiphonia fucoides*), stones and the bedrock, *c*. 2.6-0.5 m ACD: 25.3.82 (very common); 24.4.82 (quite frequent); 6.5.82 (occasional); 23.5.82 (one); 28.3.83 (common); 14.4.83 (common); 26.4.83 (frequent); 11.6.83 (a few); 2.3.84 (three); 16.3.84 (quite frequent); 1.4.84 (common); 14.4.84 (common); 1.5.84 (quite frequent); 14.5.84 (quite frequent); 12.6.84 (two). One egg mass attached to *Sertularia argentea*, concrete vertical (base of groyne), *c*. 1.1 m ACD, 1.4.84. Egg masses collected 25.3.82 released trochophores under the microscope the same day.

Kemp Town: variously attached to algae (*Palmaria palmata* (young thalli)*, Polysiphonia fucoides*), stones and the bedrock, *c*. 1.2-0.4 m ACD: 26.2.82 (very common); 10.3.82 (common); 26.3.82 (common); 25.4.82 (quite frequent); 7.5.82 (a few); 17.3.83 (frequent); 29.3.83 (common); 15.4.83 (common); 27.4.83 (common); 14.5.83 (common); 27.5.83 (occasional); 3.3.84 (one); 17.3.84 (quite frequent); 2.4.84 (common); 17.4.84 (quite frequent); 2.5.84 (quite frequent); 15.5.84 (quite frequent). Egg masses collected 17.3.83 released trochophores the same day.

Eulalia ornata Saint-Joseph, 1888 [Fauvel, 1923: 160 as *E. viridis* var. *ornata*]

Kemp Town: one, *c*. 12 mm long, with a scraping of *Dynamena pumila* from the underside of a flint cobble, *c*. 1.0 m ACD, 26.2.82.

Ovingdean: one, *c*. 14 mm long, with a scraping of *Sabellaria spinulosa* and *Molgula cf. socialis* from the chalk bedrock, c. 0.8 m ACD, 20.4.85.

Order EUNICIDA

Family **DORVILLEIDAE**

Schistomeringos neglecta (Fauvel, 1923) [Fauvel, 1923: 447 as *Staurocephalus neglectus*; George & Hartmann-Schröder, 1985: 200]

Roedean: *c*. 20 specimens densely aggregated on muddy sand under a chalk cobble, *c*. 1.9 m ACD (MLWN), 20.11.84.

Subclass **SEDENTARIA**

Infraclass SCOLECIDA

Family **ARENICOLIDAE** Lug worms

Arenicola marina (Linnaeus, 1758) [Fauvel, 1927: 161]

Roedean: a few castings observed on patches of sand, *c*. 1.3-0.6 m ACD, 7.4.85, and as high as *c*. 1.9 m ACD (MLWN), 17.9.85. The known scarce presence of *A. marina* 1982-1984 went unrecorded.

Kemp Town: common wherever suitable pockets and patches of sand occurred, much of the sand scoured away overwinter, *c*. 1.2 m ACD downwards, and in the permanent sand to the west of the regularly monitored rocky area, likewise *c*. 1.2 m ACD downwards (lower boundary of shingle beach *c*. 1.4-1.3 m ACD).

Ovingdean: castings usually conspicuous on the fairly extensive areas of sand overlying the chalk platform at this locality right up to the lower boundary of the shingle beach *c*. MTL. Monthly monitoring through spring 1985 and 1986 detected the first appearance of numerous tiny castings ejected by juveniles, *c*. 10 mm long, 18th May and 24th May respectively.

Infraclass CANALIPALPATA

Order SABELLIDA

Family **SABELLARIIDAE** Honeycomb worms

Sabellaria spinulosa (Leuckart, 1849) [Fauvel, 1927: 208] (*Sabellaria alveolata* (Linnaeus, 1767) undetected)

Roedean: sparing 1982-1983 and into 1984 until noticeably more frequent 28.9.84; thereafter not uncommon and persistently so through to cessation of monitoring which for this species was extended to December 1986. Occurred as small isolated colonies on various substrata (the chalk bedrock (colonies occasionally noted extending from the chalk onto the basal parts of *Corallina officinalis*), flint (embedded flint protruding from the chalk as well as stable/relatively stable flint cobbles, colonies often on their undersides), concrete (colonies occasionally noted on groynes extending from the concrete onto barnacles)), *c*. 1.9 m ACD (MLWN) downwards, rarely above *c*. 1.6 m ACD. Colonies typically measured between 40 by 20 mm and 150 by 100 mm, the larger ones occurring at the lower intertidal levels and subsequent to August 1984. Several empty *Sabellaria* tubes, presumably *spinulosa*, encrusted the siphonal canal of a large *Buccinum undatum* shell found on the strand-line, 1.12.84.

Kemp Town: small discrete colonies common 1982 and rather less common 1983 through to August 1984: found on various substrata (the chalk bedrock, flint (embedded flint and flint cobbles as at Roedean), concrete (groyne, dismantled railway), mussels), *c*. 1.3 m ACD (ALTL) downwards. A considerable increase in abundance had occurred by 27.9.84 when extensive sheets were found conspicuously encrusting rock ridges at the lowest shore levels, *c*. 0.7-0.5 m ACD, the shore having been previously accessible at these levels 29.8.84 when no increase in abundance had been noted (although a specific search had not been made and a modest increase may have passed unnoticed). Still thriving with

extensive sheets recorded *c*. 0.7 m ACD downwards, 9.3.85 (LW *c*. 0.4 m ACD) and 25.4.86 (LW *c*. 0.5 m ACD), and apparently just as abundant 1.12.86 (shore inaccessible below *c*. 0.7 m ACD).

Ovingdean: seasonal checks through 1985 and 1986 revealed extensive though rather fragmented sheets encrusting the bedrock to the east of Ovingdean Gap, *c*. 1.0-0.4 m ACD, with the abundant ascidian *Molgula cf. socialis* competing for available rock space and attaching to the *Sabellaria* tubes themselves.

Family **SABELLIDAE**

Branchiomma bombyx (Dalyell, 1853) [Fauvel, 1927: 319 as *Dasychone bombyx*]

Roedean: a single specimen, body length *c*. 6 mm, with a scraping of *Hymeniacidon perlevis* and *Dynamena pumila* from a concrete vertical (groyne), *c*. 0.9 m ACD, 25.2.82; another, body length *c*. 12 mm, amongst *Corallina officinalis* in a small ridge-top pool, Rhodophyta belt, *c*. 1.2 m ACD, 12.8.84.

Family **FABRICIIDAE**

Fabricia stellaris (Müller, 1774) [Hartmann-Schröder, 1971: 513 as *Fabricia sabella*]

Roedean: found very commonly in rock scrapings (detrital muddy/sandy sediment alone, as well as sediment-rich samples containing a variety of epilithic organisms, chiefly small algal and hydroid growths (e.g. one or more of the following: tube-dwelling diatoms, *Rhodothamniella floridula*, *Gelidium pusillum, Ceramium* spp., *Laomedea flexuosa, Dynamena pumila*, barnacles, *Cryptosula pallasiana*)), variously collected from the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.6 m ACD, throughout the monitoring period, often with *Polydora ciliata* (q.v.) scraped up in the same samples. Small numbers also occasionally found associated with *Polysiphonia fucoides c.* 2.0-1.0 m ACD. One record at a higher shore level, viz. two specimens in a sample of detrital sandy sediment scraped from a crevice in a concrete vertical (groyne), *c*. 4.8 m ACD (MHWN = 5.1), 26.11.83.

Number per sample, small-moderate, save four times when large numbers were found in the following scrapings: muddy detritus, *c*. 1.9 m ACD, 24.4.82; sandy detritus with a little *Rhodothamniella floridula* and a small growth of *Ceramium* sp., *c*. 1.0 m ACD, 15.3.83; sandy detritus with tube-dwelling diatoms, *c*. 3.1 m ACD, 14.4.83; sandy detritus partially bound by *Rhodothamniella floridula*, *c*. 1.0 m ACD, 23.10.84.

Kemp Town: found sparingly amongst barnacles on artificial structures (groyne, west face of marina west breakwater root), variously distributed *c*. 3.6-1.2 m ACD, October 1983-January 1985. No doubt present prior to October 1983 but overlooked. Never more than a few specimens per sample of *c*. 20-30 adult barnacles.

Abundant specimens detected locally amongst detrital muddy sediment coating the chalk bedrock, *c*. 1.1 m ACD, 7.5.82 and 17.3.83, and a few recorded amongst *Polysiphonia fucoides* (basally), *Mytilus/Palmaria-Laminaria saccharina* transition, *c*. 1.0 m ACD, 26.6.83.

Family **SERPULIDAE**

Subfamily FILOGRANINAE

Salmacina dysteri (Huxley, 1855) [Fauvel, 1927: 377; Nelson-Smith & Gee, 1966: 342 as *Filograna* (*Salmacina*) *dysteri*]

Roedean: a colony on a *Laminaria hyperborea* holdfast, strand-line, 15.12.81.

Subfamily SERPULINAE

Spirobranchus lamarcki (Quatrefages, 1866) [Zibrowius & Bellan, 1969: 378-380 as *Pomatoceros lamarcki*] (*Spirobranchus triqueter* (Linnaeus, 1758) may well have been present but undetected due to inadequate sampling)

Roedean: common throughout the monitoring period. Distributed *c*. 1.9 m ACD (MLWN) downwards, especially below *c*. 1.3 m ACD (ALTL), occurring principally on flint cobbles (mainly their undersides) and very rarely (as single specimens only) on chalk cobbles and the bedrock. One record at a higher shore level, viz. a small aggregation on the underside of a flint cobble probably shifted upshore by heavy seas, *c*. 2.8 m ACD, 31.10.82.

Kemp Town: common throughout the monitoring period. Distributed *c*. 1.1 m ACD downwards on flint cobbles (especially their undersides), often in company with *Sabellaria spinulosa* (q.v.). Three records on other substrata: concrete vertical (dismantled railway), *c*. 0.9 m ACD, 21.8.82 (a small aggregation); a *Tritia reticulata* shell tenanted by *Pagurus bernhardus*, *c*. 0.8 m ACD, 13.6.84; *Mytilus edulis*, *c*. 1.0 m ACD, 29.8.84 (several small aggregations).

Subfamily SPIRORBINAE

Janua heterostropha (Montagu, 1803) [Knight-Jones & Knight-Jones, 1977: 486 as *Janua pagenstecheri* (Quatrefages, 1866)]

Roedean: dense aggregations frequent on *Corallina officinalis*, mostly on the alga in small pools in depressions on the tops of the concrete/embedded flint foundation blocks of the dismantled railway, and restricted to a narrow tidal range, *c*. 2.3-1.9 m ACD, throughout the monitoring period January 1982-February 1985 (and similarly recorded earlier through 1981). Two specimens on a small *Fucus* frond in a shallow pool, *c*. 3.0 m ACD, 26.9.84.

Ovingdean: found in company with *Spirorbis spirorbis* (q.v.) on the underside of a button of non-local drift *Himanthalia elongata* stranded near low water, *c*. 0.6 m ACD, 24.5.86. Both species alive: 19 *J. heterostropha* (including specimens incubating eggs) and 85 *S. spirorbis* (including specimens incubating embryos).

Spirorbis spirorbis (Linnaeus, 1758) [Knight-Jones & Knight-Jones, 1977: 457] (WoRMS accepted subgenus: *Spirorbis (Spirorbis) spirorbis*)

Roedean: common on non-local drift *Fucus vesiculosus* freshly deposited on the strand-line: 31.3.81; 1.11.84; 29.11.84; 19.12.84; 24.5.86.

Kemp Town: common on non-local drift *F. vesiculosus* as at Roedean: 21.11.84 and 20.12.84.

Ovingdean: found in company with *Janua heterostropha* (q.v.) on the underside of a button of non-local drift *Himanthalia elongata* stranded near low water, *c*. 0.6 m ACD, 24.5.86. Both species alive: 85 *S. spirorbis* (including specimens incubating embryos) and 19 *J. heterostropha* (including specimens incubating eggs).

Order TEREBELLIDA

Family **CIRRATULIDAE**

Cirriformia tentaculata (Montagu, 1808) [Fauvel, 1927: 91 as *Audouinia tentaculata*]

Roedean: common and recorded in all seasons. Found in muddy sand accumulations under stones and in old piddock burrows, variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.0-0.4 m ACD, especially below the *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD.

Kemp Town: common and recorded in all seasons. Found in muddy sand accumulations under stones and in old piddock burrows, variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.2-0.4 m ACD.

Family **PECTINARIIDAE**

Lagis koreni Malmgren, 1866 [Fauvel, 1927: 221 as *Pectinaria* (*Lagis*) *koreni*]

Kemp Town: single specimens on three occasions: with *Polysiphonia fucoides*, presumably washed out of nearby sand, *Laminaria* belt, *c*. 0.5 m ACD, 10.8.83 (a small specimen); on sand in a pool, *Laminaria* belt, *c*. 0.8 m ACD, 17.4.84; on sand, *c*.0.6 m ACD, 11.3.85. Single empty tubes found on sand, *c*. 0.6 m ACD: 29.8.84; 11.3.85.

Ovingdean: one between stones, *Laminaria* belt, *c*. 0.6 m ACD, 28.9.84.

Family **TEREBELLIDAE**

Neoamphitrite figulus (Dalyell, 1853) [Fauvel, 1927: 248 as *Amphitrite johnstoni* Malmgren]

Roedean: single specimens on three occasions in mud tubes under stones: *c*. 1.2 m ACD, 11.2.83; *c*. 1.9 m ACD, 30.12.83; *c*. 1.6 m ACD, 19.12.84.

Kemp Town: single specimens on five occasions in mud tubes, only one (indicated) not under a stone: *c*. 1.0 m ACD, 5.10.82; *c*. 1.1 m ACD, 15.4.83 (one *Gattyana cirrhosa* specimen (q.v.) under the same stone); *c*. 0.8 m ACD, 17.2.84; *c*. 1.1 m ACD, 2.4.84 (in a long sinuous mud tube extending *c*. 30 cm across the bottom of a small rock pool); *c*. 1.0 m ACD, 2.5.84.

Lanice conchilega (Pallas, 1766) [Fauvel, 1927: 255] Sand Mason

Roedean: common throughout the monitoring period January 1982-February 1985. Distributed *c*. 2.6 m ACD downwards, especially below *c*. 1.9 m ACD (MLWN), the characteristic ragged-ended tubes protruding from muddy sand and gravel between stones, from muddy sand accumulations in old piddock burrows and from patches of sand thinly overlying the bedrock and buried stones.

Kemp Town: common March-May 1983 and in April 1984, otherwise more sparing. Distributed *c*. 1.1 m ACD downwards. A favoured habitat at Roedean, viz. muddy sand and gravel between stones, was scarcer at Kemp Town due to fewer and more scattered stable/relatively stable cobbles; hence tubes were predominantly recorded projecting from sandy accumulations in old piddock burrows and from sand thinly overlying the piddock-riddled bedrock.

Nicolea venustula (Montagu, 1819) [Fauvel, 1927: 260]

Roedean: a sparing presence detected 1981 and through the first half of 1982; no records subsequently. Found amongst algae (*Corallina officinalis, Polysiphonia fucoides* (usually supporting epiphytic *Ceramium* sp.)) variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.9-0.6 m ACD: 25.2.81; 26.4.81; 17.8.81; 15.9.81; 27.10.81; 9.12.81; 24.1.82; 25.2.82; 8.4.82; 24.4.82; 6.5.82; 23.5.82; 6.6.82 (a single specimen with ova). Number per sample of alga, 1-2, mostly single specimens.

Kemp Town: single specimens found on five occasions: amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 30.8.81; under a stone, *c*. 1.1 m ACD, 26.2.82; amongst *Dynamena pumila* on the underside of a stone, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 25.4.82; amongst *D. pumila* epizoic on *Mytilus edulis*, *c*. 1.0 m ACD, 7.5.82; in a scraping of *Hymeniacidon perlevis* and *D. pumila* from a concrete vertical (dismantled railway), *c*. 0.7 m ACD, 14.5.83.

Order SPIONIDA

Family **SPIONIDAE**

Polydora ciliata (Johnston, 1838) [Fauvel, 1927: 49]

Roedean: very common boring into chalk, being found in numerous rock scrapings variously collected from the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD, throughout the monitoring period, its tubes (i.e. chimneys extending from burrows in the chalk) binding to various degrees the detrital sandy sediment which coated the rock.

Small numbers found amongst barnacles scraped from the following substrata: from a flint cobble, *c*. 0.7 m ACD, 29.4.83; from a concrete vertical (groyne), *c*. 1.3 m ACD, 31.5.84; from concrete (collapsed section of a groyne), *c*. 1.5 m ACD, 10.10.84.

Kemp Town: very common boring into chalk, but tidal range restricted to the lowest shore levels by the shingle beach overlying the chalk platform down to *c*. 1.3 m ACD (ALTL).

Very occasionally found amongst barnacles on artificial structures (groyne, marina west breakwater root), *c*. 2.3-1.3 m ACD. Number per sample of *c*. 20-30 adult barnacles, small.

Scolelepis (Scolelepis) squamata (Müller, 1806) [Fauvel, 1927: 36 as *Nerine cirratulus*]

Kemp Town: one, *c*. 45 mm long (with ova), and another, *c*. 55 mm long, in sand to the west of the regularly monitored rocky area, *c*. 0.8 m ACD, 6.4.85 (both in the same fork-full of sand with one *Phyllodoce maculata* and a moderate number of *Spiophanes bombyx*).

Spiophanes bombyx (Claparède, 1870) [Fauvel, 1927: 41]

Kemp Town: common in sand to the west of the regularly monitored rocky area, *c*. 1.2-0.6 m ACD (the lowest level examined), 10.3.85 and 6.4.85, the only two occasions on which the infauna of the sand at this locality was investigated (lower boundary of the shingle beach *c*. 1.4-1.3 m ACD). Dense colonies conspicuous, *c*. 0.8-0.6 m ACD, their tubes protruding from the sand. Females with ova collected both times.

Phylum **ARTHROPODA**

Subphylum **CRUSTACEA**

Superclass **OLIGOSTRACA**

Class **OSTRACODA**

Note. Members of this class were monitored January 1983-April 1985.

Subclass **PODOCOPA**

Order PODOCOPIDA

Suborder CYTHEROCOPINA

Superfamily CYTHEROIDEA

Family **CYTHERIDAE**

Cythere lutea Müller, 1785 [Athersuch, Horne & Whittaker, 1989: 80]

Roedean: common and recorded throughout the monitoring period. Found in diverse samples (tube-dwelling diatoms, Ectocarpales indet., *Rhodothamniella floridula* (binding sandy detritus), *Gelidium pusillum*, *Corallina officinalis, Ceramium sp., Halurus flosculosus, Polysiphonia fucoides, Laomedea flexuosa, Dynamena pumila*, *Sertularia argentea, Kirchenpaueria pinnata*, barnacles, a variety of rock scrapings dominated by sandy detritus), variously collected from the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD.

Kemp Town: found only seven times and in small numbers amongst algae (Ectocarpales indet. five times, *Polysiphonia fucoides* (supporting epiphytic Ceramium sp.) twice), variously distributed in the *Mytlus/Palmaria-Laminaria* transition and the *Laminaria* belt, *c*. 1.0-0.5 m ACD: 26.6.83; 10.8.83; 15.5.84; 13.6.84. A single specimen amongst *Semibalanus balanoides* encrusting a groyne, *c*. 1.3 m ACD (ALTL), 8.10.84.

Family **CYTHERURIDAE**

Hemicytherura cellulosa (Norman, 1865) [Athersuch, Horne & Whittaker, 1989: 204]

Roedean: found commonly amongst algae (Ectocarpales indet., *Cladophora rupestris, C. sericea, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.)), predominantly the latter, and very occasionally amongst hydroids (*Dynamena pumila, Sertularia argentea, Kirchenpaueria pinnata*), variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.0-0.5 m ACD: 25.6.83-19.12.84. Always in small numbers.

Kemp Town: found only six times: amongst Ectocarpales indet. (epiphytic on *Laminaria saccharina* fronds), *c*. 0.9 m ACD and *c*. 0.5 m ACD, 10.8.83; amongst *Sertularia argentea* suspended from the underside of a concrete overhang (dismantled railway), *c*. 0.9 m ACD, 18.1 84, and c. 0.8 m ACD, 3.3.84; amongst Polysiphonia fucoides (supporting epiphytic Ceramium sp.), *c*. 1.1 m ACD, 13.8.84; amongst Ectocarpales indet. (epiphytic on a *Laminaria saccharina* frond), *c*. 0.8 m ACD, 29.8.84. Only a few per sample.

Ovingdean: a few found twice amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.): Rhodophyta belt, *c*. 1.0 m ACD, 3.11.83; Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 28.9.84.

Semicytherura striata (Sars, 1866) [Athersuch, Horne & Whittaker, 1989: 217]

Kemp Town: one of each sex and several empty valves amongst sandy detritus collected from the swash-line on a narrow strip of sand interposed between the lower boundary of the shingle beach and the *Mytilus*-covered rocks to seaward, *c*. 1.3-1.2 m ACD, 2.6.84. *Leptocythere pellucida* (q.v.) in the same sample.

Family **HEMICYTHERIDAE**

Heterocythereis albomaculata (Baird, 1838) [Athersuch, Horne & Whittaker, 1989: 165]

Roedean: a very common species occurring in diverse samples (tube-dwelling diatoms, Ectocarpales indet., *Cladophora rupestris, C. sericea, Bryopsis* sp., *Rhodothamniella floridula, Gelidium pusillum, Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides, Hartlaubella gelatinosa, Laomedea flexuosa, Dynamena pumila, Sertularia argentea*, barnacles, a variety of rock scrapings dominated by sandy detritus), variously collected from the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD: 12.1.83-20.4.85.

Number per sample, small-moderate, the moderate numbers occurring March, April, June-August 1983, February, April-June, December 1984, and April 1985; large numbers three times, viz. in a rock scraping composed of sandy detritus, small algal growths (including *Rhodothamniella floridula*) and polychaete tubes (*Fabricia stellaris* and *Polydora ciliata*), Rhodophyta belt, *c*. 1.0 m ACD, 15.3.83, and amongst Ectocarpales indet., Rhodophyta belt, *c*. 1.0 m ACD, 10.7.83, and *c*. 1.1 m ACD, 25.7.83.

Kemp Town: found sparingly in diverse samples (Ectocarpales indet., *Ceramium* sp., *Polysiphonia fucoides*, *Hartlaubella gelatinosa, Dynamena pumila, Molgula cf. socialis*), variously collected from the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD: 15.4.83; 27.4.83; 12.6.83-10.8.83; 2.5.84; 2.6.84; 13.6.84. One record at a higher shore level, viz. a single specimen amongst *Semibalanus balanoides* encrusting a groyne, *c.* 1.3 m ACD (ALTL), 8.10.84. Number per sample small.

Ovingdean: several specimens amongst *Cladophora* sp., Rhodophyta belt, *c*. 1.0 m ACD, 16.4.83.

Family **LEPTOCYTHERIDAE**

Callistocythere badia (Norman, 1862) [Athersuch, Horne & Whittaker, 1989: 110]

Roedean: found sparingly in diverse samples (tube-dwelling diatoms, *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), a variety of sediment-rich rock scrapings containing small algal and/or hydroid growths (*Rhodothamniella floridula*, *Ceramium* spp., *Laomedea flexuosa, Dynamena pumila*), barnacles) variously collected from the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.6 m ACD: 15.3.83; 29.4.83; 12.5.83; 1.12.83; 30.12.83; 14.4.84; 6.10.84; 10.10.84; 6.12.84. Number per sample, 1-3.

Leptocythere pellucida (Baird, 1850) [Athersuch, Horne & Whittaker, 1989: 96]

Kemp Town: one male (dead) and several empty valves amongst sandy detritus skimmed from the swash-line on a narrow strip of sand interposed between the lower boundary of the shingle beach and the *Mytilus*-covered rocks to seaward, *c*. 1.3-1.2 m ACD, 2.6.84. *Semicytherura striata* (q.v.) in the same sample.

Family **LOXOCONCHIDAE**

Hirschmannia viridis (Müller, 1785) [Athersuch, Horne & Whittaker, 1989: 186]

Roedean: common and recorded throughout the monitoring period with adults occurring mid-March-mid-June. Found in diverse samples (tube-dwelling diatoms, Ectocarpales indet., *Cladophora sericea, Bryopsis* sp., *Rhodothamniella floridula* (binding sandy detritus), *Ceramium* sp., *Polysiphonia fucoides, Hartlaubella gelatinosa, Laomedea flexuosa, Dynamena pumila, Sertularia argentea*, barnacles) variously collected from the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD. Three records at higher shore levels on groynes, all juveniles: several amongst tube-dwelling diatoms, *c*. 3.4 m ACD (MTL = 3.5), 27.2.83; one amongst barnacles, *c*. 4.1 m ACD, 17.1.84; several amongst barnacles, *c*. 3.6 m ACD, 31.1.84.

Loxoconcha rhomboidea (Fischer, 1855) [Athersuch, Horne & Whittaker, 1989: 174]

Roedean: a single male amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *F. serratus* belt, *c*. 1.4 m ACD, 6.12.84.

Kemp Town: a single juvenile amongst Ectocarpales indet. (epiphytic on a *Laminaria saccharina* frond), *Laminaria* belt, *c*. 0.5 m ACD, 10.8.83.

Family **PARADOXOSTOMATIDAE**

Paradoxostoma robinhoodi Horne & Whittaker, 1985 [Athersuch, Horne & Whittaker, 1989: 298]

Kemp Town: two males amongst *Hartlaubella gelatinosa* coated with diatoms and heavily laden with detrital sandy sediment, *c*. 1.1 m ACD, 2.5.84.

Superclass **MULTICRUSTACEA**

Class **HEXANAUPLIA**

Subclass **COPEPODA**

Order CALANOIDA

Family **TEMORIDAE**

Temora longicornis (Müller, 1785) [Sars, 1902; Boxshall & Halsey, 2004]

Roedean: one male in a rock scraping containing sandy detritus and mud chimneys constructed by *Polydora ciliata*, Rhodophyta belt, *c*. 0.9 m ACD, 17.5.84.

Kemp Town: one female amongst *Polysiphonia fucoides*, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 2.6.84.

Note. These two records of single specimens stranded by the falling tide, May and June 1984, indicate healthy numbers in the coastal zooplankton.

Order CANUELLOIDA

Note. Members of this order and the order Harpacticoida (below) were monitored February 1983-February 1985, but comparative under-recording occurred during the first five months due to less efficient extraction of specimens from habitat samples. For additional records of members of these two orders from the Sussex coast 1992-1997, including the Brighton intertidal, see Ventham (2011).

Family **LONGIPEDIIDAE**

Longipedia helgolandica Klie, 1949 [Wells, 1980; Huys *et al*., 1996]

Roedean: single females found twice: in a scraping of *Dynamena pumila* and *Morchellium argus* from a rock vertical, Rhodophyta belt, *c*. 1.2 m ACD, 2.3.84; amongst *Polysiphonia fucoides* (supporting epiphyic *Ceramium* sp.), *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, 6.12.84.

Longipedia minor T. & A. Scott, 1893 [Wells, 1980; Huys *et al*., 1996]

Roedean: females found very sparingly in various habitats (Ectocarpales indet., *Rhodothamniella floridula*, *Laomedea flexuosa*, barnacles), variously distributed in the *F. vesiculosus*, *F. serratus* and Rhodophyta belts, *c*. 2.6-0.9 m ACD: 11.6.83; 24.8.83; 1.12.83; 14.4.84; 12.6.84; 29.6.84. Single specimens per sample, save once, when two were found amongst Ectocarpales indet, Rhodophyta belt, *c*. 1.0 m ACD, 24.8.83.

Kemp Town: a single female in a scraping of *Bryopsis* sp., *Dynamena pumila* and small *Mytilus edulis* from a landward-facing (north) concrete vertical (dismantled railway), *c*. 1.0 m ACD, 29.3.83.

Order HARPACTICOIDA

Family **AMEIRIDAE**

Ameira parvula parvula (Claus, 1866) [Sars, 1907 as *A. tau*; Lang, 1948; Moore, 1976] (Representative specimens examined by Dr R. Hamond)

Roedean: a single specimen August 1983; frequent records March 1984-January 1985. Found mainly amongst algae (Ectocarpales indet., *Ceramium* sp., *Polysiphonia fucoides*) and very occasionally in other habitats (*Dynamena pumila*, *Kirchenpaueria pinnata*, barnacles), variously distributed in the *F. vesiculosus*, *F. serratus* and Rhodophyta belts, *c*. 2.6-0.8 m ACD: 9.8.83 (one ovigerous female, Ectocarpales indet, *c*. 0.8 m ACD); 2.3.84; 31.5.84-12.1.85. Number per sample, 1-5 or a few more, maximal May-July 1984, especially amongst Ectocarpales indet..

Kemp Town: undetected 1983; seven records June-October 1984: amongst Ectocarpales indet. in a pool on a storm-damaged groyne, *Mytilus* belt, *c*. 1.5 m ACD, 2.6.84; twice amongst Ectocarpales indet., *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 13.6.84; amongst *Polysiphonia fucoides*, *c*. 1.0 m ACD and in a scraping of ascidians (*Morchellium argus* and *Molgula cf. socialis*) from a concrete vertical (dismantled railway), *c*. 0.9 m ACD, 31.7.84; amongst Ectocarpales indet. epiphytic on a *Laminaria saccharina* frond, *c*. 0.8 m ACD, 29.8.84; amongst *Semibalanus balanoides* encrusting a groyne, *c*. 1.3 m ACD, 8.10.84. Number per sample, 1-a few.

Breeding: ovigerous females recorded January, May-October.

Ameira scotti Sars, 1911 [Sars, 1911; Bodin, 1970]

Roedean: a single female amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 0.9 m ACD, 23.10.84.

Ameiropsis sp.

Roedean: a single female amongst *Dynamena pumila*, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 31.1.84.

Nitokra typica typica Boeck, 1865 [Sars, 1907; Lang 1948] (Examined by Dr R. Hamond)

Kemp Town: a single female in a scraping of *Semibalanus balanoides* and small *Mytilus edulis* from the east face of a groyne, *c*. 4.1 m ACD, 2.12.83.

Family **CANTHOCAMPTIDAE**

Itunella muelleri (Gagern, 1922) [Lang, 1948] (Representative specimens examined by Dr R. Hamond)

Roedean: single specimens on three occasions in the *F. serratus* belt: amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 2.0 m ACD, 17.12.83, and *c*. 1.6 m ACD, 17.1.84; in a scraping of sandy detritus and young Chlorophyta (*Ulva lactuca*, *Ulva* sp.) from the side of a pool, *c*. 2.0 m ACD, 6.12.84.

Kemp Town: single specimens on three occasions: in a scraping of *Semibalanus balanoides* and small *Mytilus edulis* from the east face of a groyne, *c*. 4.1 m ACD, 2.12.83; amongst *Sertularia argentea* suspended from the underside of a concrete overhang (dismantled railway), *c*. 1.0 m ACD, 18.1.84 , and *c*. 0.7 m ACD, 9.2.85.

Mesochra pygmaea pygmaea (Claus, 1863) [Sars, 1907; Hamond, 1971] (Representative specimens examined by Dr R. Hamond)

Roedean: found five times in sandy detrital rock scrapings containing a variety of small growths (e.g. tube-dwelling diatoms, *Ceramium* spp., *Laomedea flexuosa*), *F. vesiculosus* belt, *c*. 2.6 m ACD: 1.12.83; 1.4.84; 12.7.84; 7.11.84; 4.1.85. Number per sample, 1-4.

Breeding: single ovigerous females: 1.4.84; 7.11.84; 4.1.85.

Family **CLETODIDAE**

Cletodes tenuipes T. Scott, 1896 [Sars, 1909] (Specimens examined by Dr R. Hamond)

Roedean: found twice: one female amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.0 m ACD, 21.10.83; one male in a sediment-rich rock scraping dominated by *Dynamena pumila*, *F. vesiculosus* belt, *c*. 2.6 m ACD, 1.12.83.

Enhydrosoma longifurcatum Sars, 1909 [Sars, 1909; Roe, 1959; Bodin, 1970] (Examined by Dr R. Hamond)

Roedean: a single female amongst *Rhodothamniella floridula* (binding sandy detritus), Rhodophyta belt, *c*. 1.0 m ACD, 23.10.84.

Enhydrosoma propinquum (Brady & Robertson in Brady, 1880) [Sars, 1909] (Examined by Dr R. Hamond)

Kemp Town: a single male amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 0.6 m ACD (MLWS), 9.2.85.

Family **ECTINOSOMATIDAE**

Ectinosoma melaniceps Boeck, 1865 [Sars, 1904; Roe, 1958; Lang, 1965]

Roedean: found mainly amongst algae (Ectocarpales indet., *Cladophora rupestris, C. sericea, Bryopsis* sp., *Rhodothamniella floridula, Gelidium pusillum, Corallina officinalis, Ceramium* sp., *Halurus flosculosus*, *Polysiphonia fucoides*) and not infrequently in other habitats (*Laomedea flexuosa, Obelia longissima* (drift), *Dynamena pumila, Sertularia argentea*, barnacles, detrital sandy sediment bound by *Polydora ciliata* chimneys), variously distributed in the *F. vesiculosus* (scarce), *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD: 28.3.83-4.1.85. One record at a higher shore level, viz. a single specimen amongst barnacles (*Semibalanus balanoides* with occasional *Austrominius modestus*) encrusting the east face of a groyne, *c*. 4.1 m ACD, 6.10.84.

Number per sample usually small with moderate numbers occurring intermittently through the summer (amongst Ectocarpales indet., and *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.)) and autumn (amongst *P. fucoides* supporting epiphytic *Ceramium* sp.) with records indicating maximum abundance in September.

Kemp Town: found sparingly in various habitats (tube-dwelling diatoms, Ectocarpales indet., *Ceramium* sp., *Polysiphonia fucoides, Dynamena pumila, Sertularia argentea, Sabellaria spinulosa* tubes encrusting a flint cobble) variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.2-0.5 m ACD: 29.3.83-25.8.83; 17.2.84-15.5.84; 31.7.84; 13.8.84; 29.8.84. One record at a higher shore level, viz. a single specimen amongst *Ceramium* sp. attached to *Mytilus edulis* on a concrete ledge adjoining the marina west breakwater root, *c*. 3.3 m ACD (MTL = 3.5), 25.8.83. Always in small numbers.

Ovingdean: found twice amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.): a single specimen, Rhodophyta belt, *c*. 1.0 m ACD, 3.11.83; several specimens, Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 28.9.84.

Breeding: ovigerous females recorded early April to late September.

Family **HAMONDIIDAE**

Ambunguipes rufocincta (Norman in Brady, 1880) [Sars, 1905 as *Rhynchothalestris*; Huys, 1990]

Roedean: found sparingly amongst algae (Ectocarpales indet., *Cladophora sericea, Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides*), mainly Ectocarpales indet., variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.9-0.6 m ACD: 11.6.83-21.10.83; 1.5.84; 30.7.84; 28.8.84. Single specimens twice amongst *Sertularia argentea*: *c*. 1.3 m ACD, 21.10.83; *c*. 0.5 m ACD, 16.3.84. Number per sample of alga, 1-a few, maximal August 1983 amongst Ectocarpales indet..

Kemp Town: found six times amongst algae (five times amongst Ectocarpales indet., once amongst *Polysiphonia fucoides* supporting epiphytic *Ceramium* sp.), variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.3-0.5 m ACD: 12.2.83 (*P. fucoides*); 26.6.83; 10.8.83 (twice); 25.8.83; 15.5.84. A single male amongst detritus-laden *Sertularia argentea*, landward-facing concrete vertical (dismantled railway), *c*. 1.0 m ACD, 17.2.84. Number per sample of alga, 1-a few, maximal August 1983.

Breeding: ovigerous females recorded late June to August.

Family **HARPACTICIDAE**

Harpacticus chelifer (Müller, 1776) [Sars, 1904; Huys *et al*., 1996]

Roedean: found frequently amongst algae (Ectocarpales indet., *Cladophora rupestris, C. sericea, Ceramium* sp., *Polysiphonia fucoides*) variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.3-0.6 m ACD: 11.2.83; 27.2.83; 11.6.83-30.12.83; 15.2.84; 31.5.84-28.8.84; 6.12.84; 8.2.85. A single specimen amongst the hydroid *Kirchenpaueria pinnata* on the downward-facing surface of a concrete overhang (groyne), *c*. 1.3 m ACD (ALTL), 12.6.84. Number per sample of alga usually small with moderate numbers occurring rarely in the summer.

Kemp Town: occurred frequently amongst algae (Ectocarpales indet., *Ceramium* sp., *Polysiphonia fucoides*) variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD: 12.2.83; 27.4.83; 26.6.83-25.8.83; 19.11.83; 2.5.84-13.6.84; 13.8.84-24.10.84; 9.2.85. Once amongst hydroids, viz. several specimens in a scraping of *Dynamena pumila, Sertularella gaudichaudi* and small *Sertularia argentea* from a landward-facing concrete vertical (dismantled railway), *c*. 0.9 m ACD, 24.10.84. Four records amongst algae at higher shore levels: a single late-stage copepodid amongst *Ceramium* sp. attached to *Mytilus edulis* on a concrete ledge adjoining the marina west breakwater root, *c.* 3.3 m ACD, 25.8.83, and four specimens similarly situated, 20.12.84; small numbers amongst Ectocarpales indet. on a storm-damaged groyne, *c*. 1.3 m ACD, 15.5.84, and *c*. 1.5 m ACD, 2.6.84. Number per sample of alga usually small with moderate numbers occurring rarely in the summer.

Breeding: pairs in copula: 26.6.83; 25.7.83; 10.8.83; 19.11.83; 15.5.84; 2.6.84; 12.6.84; 12.8.84; 28.8.84. Ovigerous females recorded April-September, November, December.

Harpacticus giesbrechti Klie, 1927 [Huys *et al*., 1996] (Representative specimens examined by Dr R. Hamond)

Roedean: found sparingly amongst algae (Ectocarpales indet., *Cladophora sericea, Ceramium* sp., *Polysiphonia fucoides*) variously distributed in the *F. vesiculosus, F, serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.0-0.6 m ACD: 9.8.83-7.10.83; 17.1.84; 14.5.84; 30.7.84-23.10.84. Always in small numbers.

Kemp Town: found sparingly amongst algae (Ectocarpales indet., *Ceramium* sp., *Polysiphonia fucoides*) and twice in non-phytal habitats (*Hartlaubella gelatinosa, Semibalanus balanoides*) variously distributed in the *Mytilus*, *Mytilus/Palmaria* and *Laminaria* belts, *c*. 3.3-0.5 m ACD: 11.7.83; 10.8.83; 25.8.83; 19.11.83; 2.5.84; 15.5.84; 2.6.84; 13.8.84-24.10.84. Always in small numbers.

Breeding: ovigerous females recorded May-November.

Harpacticus obscurus T. Scott, 1895 [Sars, 1904 as *H. gracilis*; Lang, 1948; Huys *et al*., 1996]

Roedean: a common species found mainly amongst algae (Ectocarpales indet. (particularly), *Cladophora rupestris, C. sericea, Ceramium* sp., *Polysiphonia fucoides*) and very occasionally amongst hydroids (*Hartlaubella gelatinosa, Laomedea flexuosa, Dynamena pumila, Sertularia argentea, Kirchenpaueria pinnata*), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.6 m ACD: 12.5.83-24.8.83; 18.11.83-17.1.84; 2.3.84; 1.5.84-23.10.84. One record at a higher shore level, viz. a single female washed upshore and stranded amongst *Blidingia minima* on top of a groyne, *c*. 5.7 m ACD (MHWN = 5.1), 14.1.84, during a period of driving south-westerly gales and heavy seas.

Number per sample of alga, small-large, the moderate-large numbers occurring June and July 1983 and May-July 1984, especially amongst Ectocarpales indet.. Small numbers in hydroid samples.

Kemp Town: found frequently amongst algae (tube-dwelling diatoms, Ectocarpales indet., *Ceramium* sp., *Polysiphonia nigra, P. fucoides*) and rarely in other habitats (*Hartlaubella gelatinosa, Sertularia*

argentea, barnacles), variously distributed in the *Mytilus, Mytilus/Palmaria* and *Laminaria* belts, *c*. 3.3-0.5 m ACD: 12.6.83-25.8.83; 19.11.83-18.1.84; 2.4.84-13.8.84; 24.10.84.

Number per sample of alga, small-moderate, the moderate numbers occurring June 1983 and May and June 1984, especially amongst Ectocarpales indet.; a large number once amongst Ectocarpales indet., c. 0.8 m ACD, 15.5.84. Small numbers in other habitat samples.

Breeding: pairs in copula: 11.6.83; 25.6.83; 10.7.83; 19.11.83; 30.12.83; 2.4.84-30.7.84. Ovigerous females recorded January, March-September, December.

Harpacticus uniremis uniremis Kröyer, 1842 [Sars, 1904; Lang, 1948; Huys *et al*., 1996]

Roedean: found eight times in May 1984 amongst algae (seven times amongst Ectocarpales indet., once amongst *Polysiphonia fucoides*), variously distributed in and at levels below the *F. serratus*/Rhodophyta transition, *c*. 1.3-0.6 m ACD: 1.5.84 (three times including the single record amongst P. fucoides); 14.5.84 (three times); 31.5.84 (twice). A later record of a single female amongst tube-dwelling diatoms laden with detrital sandy sediment, *F. vesiculosus* belt, *c*. 2.7 m ACD, 4.3.85. One to several specimens per sample, save twice, when moderate numbers were found amongst Ectocarpales indet., *c*. 1.3 and *c*. 0.6 m ACD, 14.5.84.

Kemp Town: found three times: several amongst *Hartlaubella gelatinosa* densely coated with diatoms and heavily laden with detrital sandy sediment, *c*. 1.1 m ACD, 2.5.84; a small number amongst diatom-coated Ectocarpales indet., *c*. 0.8 m ACD, 15.5.84; one in a scraping of *Dynamena pumila, Sertularella gaudichaudi* and *Molgula cf. socialis* from a landward-facing concrete vertical (dismantled railway), *c*. 0.9 m ACD, 31.7.84.

Breeding: pairs in copula: 1.5.84; 14.5.84; 15.5.84. Ovigerous females recorded 2.5.84.

Zaus spinatus spinatus Goodsir, 1845 [Sars, 1904; Huys *et al*., 1996]

Roedean: common in all seasons. Found chiefly amongst algae (Ectocarpales indet., *Dictyota dichotoma*, *Cladophora rupestris, Bryopsis* sp., *Corallina officinalis, Gracilaria verrucosa, Plocamium cartilagineum*, *Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides, P. nigra, Rhodomela confervoides*), predominantly *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), and occasionally amongst hydroids (drift *Obelia longissima, Sertularia argentea, Kirchenpaueria pinnata*), variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.9-0.5 m ACD: 12.1.83-8.2.85. Never in large numbers.

Kemp Town: found frequently amongst algae (Ectocarpales indet., young *Laminaria saccharina, Mastocarpus stellatus, Ceramium* sp., *Polysiphonia fucoides, P. nigra*) and rarely in other habitats (*Hartlaubella gelatinosa*, *Dynamena pumila, Sertularia argentea, Semibalanus balanoides*), variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.3-0.5 m ACD: 12.2.83-25.8.83; 19.11.83; 18.1.84; 2.4.84-24.10.84; 7.12.84; 9.2.85. Never in large numbers.

Ovingdean: small numbers on three occasions amongst algae: *Cladophora* sp., Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 16.4.83; *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 0.7 m ACD, 28.9.84; *Cystoclonium purpureum* and *Rhodomela confervoides*, *Laminaria* belt, *c*. 0.5 m ACD, 10.3.85.

Breeding: pairs in copula: 11.2.83-26.5.83; 10.7.83; 7.10.83-10.3.85. Ovigerous females recorded January-December.

Family **LAOPHONTIDAE**

Heterolaophonte brevipes Roe, 1958 [Roe, 1958] (Representative specimens examined by Dr R. Hamond)

Note. First British record having previously been found only in Ireland. Roe (1958) recorded it from the Dalkey (Co. Dublin) area in various habitats, ranging from *Lichina pygmaea* to the laminarian zone, with the greatest numbers in the high regions – barnacles were not sampled.

Roedean: found frequently amongst barnacles (*Semibalanus balanoides*, sparse *Austrominius modestus*) encrusting concrete verticals (groynes and dismantled railway), *c*. 4.1-1.5 m ACD: 11.6.83; 3.11.83-4.2.85. Four records amongst *Blidingia minima* on groynes at higher shore levels: *c*. 5.6 m ACD, 15.9.83; *c*. 5.3 m ACD, 14.1.84; *c*. 5.3 and *c*. 5.2 m ACD (MHWN = 5.1), 6.10.84.

Number per sample of *c*. 20-30 adult barnacles, 1-4, and rarely up to 10 or more (easily overlooked), and in samples of *Blidingia*, 1-2.

Kemp Town: found intermittently amongst barnacles encrusting the concrete groyne *c*. 100 m west of the marina west breakwater root, *c*. 4.1-1.3 m ACD: 26.7.83; 23.10.83; 2.12.83; 14.7.84; 8.10.84; 11.1.85. Three records at higher shore levels: amongst *Blidingia minima* on the same groyne, *c*. 5.3 m ACD, 2.12.83, and *c*. 5.6 m ACD, 14.7.84; amongst barnacles encrusting steel piling (west face of marina west breakwater root), *c*. 5.4 m ACD, 11.1.85. Number per sample of barnacles and *Blidingia* similar to Roedean.

The continued presence of *H. brevipes* on barnacles (*Semibalanus balanoides*, sparse *Austrominius modestus*) was confirmed at Kemp Town on the previously examined groyne, *c*. 5.1-2.3 m ACD, 10.1.1992, indicating the association with its barnacle hosts is genuine: adults per sample of *c*. 20-30 adult barnacles, 7-18, maximal at *c*. 4.1 m ACD (Ventham 2011; Huys 2016).

Breeding: pairs in copula: 3.11.83; 20.11.84. Ovigerous females recorded January, April, June, July, December.

Laophonte cornuta Philippi, 1840 [Sars, 1907]

Roedean: occurred very frequently and in diverse habitats (tube-dwelling diatoms, Ectocarpales indet., *Cladophora rupestris, Bryopsis* sp., *Rhodothamniella floridula, Gelidium pusillum, Plocamium cartilagineum*, *Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides, Laomedea flexuosa, Dynamena pumila, Sertularia argentea, Amathia citrina, Bugulina turbinata*, detrital sandy sediment bound by *Polydora ciliata* chimneys), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD: 15.3.83; 28.3.83; 14.4.83; 10.7.83-30.12.83; 15.2.84-12.6.84; 28.8.84-8.2.85. Number per sample, 1-10 or a few more, mostly 1-2 or 3, with records indicating peak abundance in the autumn.

Kemp Town: found seven times only: amongst *Sertularia argentea* suspended from the underside of a concrete overhang (dismantled railway), *c*. 0.7 m ACD, 17.3.83; amongst *Gonothyraea loveni* on a concrete vertical (dismantled railway), *c*. 0.8 m ACD, 17.4.84; amongst Ectocarpales indet. on a groyne, *c*. 1.3 m ACD, 15.5.84; in a scraping of *Dynamena pumila, Sertularella gaudichaudi* and *Molgula cf. socialis* from a concrete vertical (dismantled railway), *c*. 0.9 m ACD, 31.7.84; amongst *Semibalanus balanoides* encrusting a groyne, *c*. 1.3 m ACD, 8.10.84; amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 0.8 m ACD, 24.10.84: in a scraping of *Dynamena pumila*, small *Mytilus edulis* and *Molgula cf. socialis* from a concrete vertical (dismantled railway), *c*. 0.8 m ACD, 9.2.85. Number per sample, 1-2.

Ovingdean: one in a rock scraping composed mainly of detrital sandy sediment and *Polydora ciliata* chimneys, and containing a little *Rhodothamniella floridula*, *c*. 0.8 m ACD, 20.4.85.

Breeding: a pair in copula 23.10.84. Ovigerous females recorded April-June, August, October.

Laophonte serrata (Claus, 1863) [Sars, 1907]

Roedean: single females on three occasions: amongst *Sertularia argentea*, groyne base vertical, *c*. 0.5 m ACD, 16.3.84; amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.1 m ACD, 20.11.84, and *c*. 1.2 m ACD, 18.1.85.

Kemp Town: one female in a scraping of *Dynamena pumila* and *Sertularella gaudichaudi* from the downward-facing surface of a concrete overhang (dismantled railway), *c*. 0.9 m ACD, 11.9.84.

Paralaophonte brevirostris (Claus, 1863) [Sars, 1908 as *Laophonte*]

Roedean: a common species found mainly amongst algae (tube-dwelling diatoms, Ectocarpales indet., *Cladophora rupestris, C. sericea, Rhodothamniella floridula, Gelidium pusillum, Ceramium* sp., *Halurus flosculosus*, drift *Brongniartella byssoides, Polysiphonia fucoides*) and not infrequently in other habitats (drift *Obelia longissima, Dynamena pumila, Sertularia argentea, Kirchenpaueria pinnata, Amathia citrina*, detrital sandy sediment bound by *Polydora ciliata* chimneys), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.6-0.5 m ACD: 15.3.83; 28.3.83; 29.4.83; 11.6.83-8.2.85. One record at a higher shore level, viz. a single specimen in a scraping of *Semibalanus balanoides* (coated with fine detritus) from a groyne, *c*. 3.9 m ACD, 15.2.84.

Number per sample of alga, small-moderate, the moderate numbers occurring August-October 1993, especially amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.) and Ectocarpales indet. (August and early September only); large numbers twice, viz. amongst Ectocarpales indet., *c*. 1.0 m ACD, 24.8.83, and *P. fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 0.9 m ACD, 23.9.83. Small numbers in other habitat samples.

Kemp Town: found quite frequently amongst algae (Ectocarpales indet., *Polysiphonia fucoides*) and sparingly amongst hydroids (*Dynamena pumila, Sertularia argentea*), variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD: 17.3.83; 29.3.83; 15.4.83; 26.6.83-25.8.83; 19.11.83; 18.1.84-3.3.84; 15.5.84-24.10.84; 9.2.85. Three records at higher shore levels: several specimens amongst *Ceramium* sp. attached to *Mytilus edulis* on a concrete ledge adjoining the marina west breakwater root, *c*. 3.3 m ACD, 25.8.83; one amongst Ectocarpales indet. on a storm-damaged groyne, *c*. 1.5 m ACD, 2.6.84; one amongst *Semibalanus balanoides* on the same groyne, *c*. 1.3 m ACD, 8.10.84.

Number per sample of alga, small-moderate, the moderate numbers occurring July and August 1983, especially amongst Ectocarpales indet.. Small numbers in hydroid samples.

Ovingdean: several specimens amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.0 m ACD, 3.11.83.

Breeding; a pair in copula 3.3.84; ovigerous females recorded February-November.

Paralaophonte congenera congenera (Sars, 1908) [Sars, 1908 as *Laophonte*; Hamond, 1969; Huys & Lee, 2009]

Roedean: female specimens on three occasions: two amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, 17.1.84; one amongst *P.*

fucoides (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.0 m ACD, 15.2.84; one amongst Ectocarpales indet., Rhodophyta belt, c. 1.2 m ACD, 12.7.84.

Paronychocamptus curticaudatus (Boeck, 1865) [Sars, 1908 as *Laophonte curticauda*]

Roedean: found on three occasions: one of each sex in a rock scraping dominated by sandy detritus and containing young Chlorophyta (*Ulva lactuca*, *Ulva* sp.) and a little *Dynamena pumila*, *F. vesiculosus* belt, *c*. 2.6 m ACD, 1.12.83; two of each sex amongst a tube-dwelling diatom species, *F. vesiculosus* belt, *c*. 2.6 m ACD, 31.1.84; one female in a scraping of barnacles and several small *Molgula cf. socialis* from a collapsed section of a groyne, *F. serratus* belt, *c*. 1.5 m ACD, 10.10.84.

Pseudonychocamptus koreni (Boeck, 1872) [Sars, 1908 as *Laophonte*] (Specimens examined by Dr R. Hamond)

Roedean: two females and one male in a rock scraping containing small algal growths (mainly *Ceramium* spp.) and the hydroid *Laomedea flexuosa* heavily laden with detrital sandy sediment, *F. vesiculosus* belt, *c*. 2.5 m ACD, 31.5.84.

Kemp Town: a single female amongst *Semibalanus balanoides* encrusting a groyne, *c*. 1.3 m ACD (ALTL), 8.10.84.

Family **LAOPHONTOPSIDAE**

Laophontopsis borealis Huys & Willems, 1989 [Huys & Willems, 1989]

Roedean: found very frequently amongst algae (tube-dwelling diatoms, Ectocarpales indet., *Rhodothamniella floridula, Gelidium pusillum, Corallina officinalis, Ceramium* sp., *Polysiphonia fucoides*), predominantly *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), and not infrequently in other habitats (*Laomedea flexuosa, Dynamena pumila, Sertularia argentea*, barnacles, detrital sandy sediment bound by *Polydora ciliata* chimneys), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.3-0.5 m ACD: 11.2.83-26.4.83; 11.6.83; 23.9.83-28.8.84; 10.10.84-8.2.85.

Number per sample usually very small, the majority of records occurring in the autumn and winter; moderate numbers twice amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 1.3 m ACD (ALTL), 17.1.84.

Kemp Town: scarce in various habitats (*P. fucoides* (supporting epiphytic *Ceramium* sp.), *Hartlaubella gelatinosa, Dynamena pumila, Sertularia argentea*, a scraping of ascidians containing *Morchellium argus* and *Molgula cf. socialis*), *c*. 1.1-0.8 m ACD: 12.2.83; 17.2.84; 2.5.84-13.8.84; 24.10.84; 9.2.85.

Single specimens per sample, save once, when several were found amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 1.0 m ACD, 13.6.84.

Breeding: a pair in copula 31.5.84 and 12.6.84; ovigerous females undetected.

Family **METIDAE**

Metis ignea ignea Philippi, 1843 [Sars, 1910; Lang, 1948]

Roedean: single specimens found three times: in a rock scraping dominated by sandy detritus and containing young Chlorophyta (*Ulva lactuca, Ulva* sp.) and a little *Dynamena pumila*, *F. vesiculosus*

belt, *c*. 2.6 m ACD, and in scraping of *Semibalanus balanoides* and young *Molgula cf. socialis* from a collapsed section of a concrete groyne, *c*. 1.1 m ACD, 1.12.83; in a scraping of *D. pumila* and *Morchellium argus* from a rock vertical, Rhodophyta belt, *c*. 1.2 m ACD, 2.3.84.

Family **MIRACIIDAE**

Subfamily DIOSACCINAE

Robertsonia normani (Brady, 1910) [Sars, 1906 as *Amphiascus similis*; Lang, 1948 as *Amonardia normani*] (Representative specimens examined by Dr R. Hamond)

Roedean: found three times: two females amongst *Polysiphonia fucoides* (supporting epiphytic Ectocarpales indet. and *Ceramium* sp.), Rhodophyta belt, *c*. 1.0 m ACD, and one female amongst barnacles (supporting young *Ulva* sp.) encrusting a groyne, *c*. 1.3 m ACD, 31.5.84; one female and two males amongst Ectocarpales indet., Rhodophyta belt, *c*. 0.9 m ACD, 12.6.84.

Amphiascoides debilis (Giesbrecht, 1881) [Sars, 1906 as *Amphiascus*] (Representative specimens examined by Dr R. Hamond)

Roedean: found very sparingly amongst algae (Ectocarpales indet., *Ceramium* sp., *Halurus flosculosus*, *Polysiphonia fucoides*) and hydroids (*Laomedea flexuosa, Dynamena pumila, Kirchenpaueria pinnata*), variously distributed in the *F. vesiculosus, F. serratus* and Rhodophyta belts, *c*. 2.6-1.1 m ACD: 7.10.83; 18.11.83; 1.12.83; 12.6.84; 12.7.84; 10.9.84; 20.11.84. Number per sample, small.

Kemp Town: several specimens, including an ovigerous female, in a scraping of *Semibalanus balanoides*, small *Mytilus edulis* and several young *Molgula cf. socialis* from a storm-damaged groyne, *c*. 1.3 m ACD, 8.10.84.

Breeding: ovigerous females recorded June, September-November.

Amphiascoides cf. subdebilis (Willey, 1935) [Lang, 1948 as *Amphiascella*] (Specimens examined by Dr. R. Hamond)

Roedean: one of each sex amongst *Dynamena pumila* on the underside of a chalk cobble, *F. serratus* belt, *c*. 1.6 m ACD, 10.9.84.

Sarsamphiascus minutus (Claus, 1863)? [Lang, 1948 as *Amphiascus aegyptius* (misspelt *aegypticus*)] (Representative specimens provisionally assigned *A. aegyptius* Gurney, 1927 by Dr R. Hamond)

Roedean: found very frequently amongst algae (Ectocarpales indet., *Cladophora rupestris, C. sericea, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides*) and not infrequently in other habitats (*Laomedea flexuosa, Dynamena pumila, Sertularia argentea*, barnacles, *Amathia citrina*, detrital sandy sediment bound by *Polydora ciliata* chimneys), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.6-0.5 m ACD: 15.3.83; 25.7.83-8.2.85. Always in small numbers.

Kemp Town: found very sparingly amongst algae (Ectocarpales indet., *Ceramium* sp., *Polysiphonia fucoides*) and rarely amongst hydroids (*Dynamena pumila, Sertularia argentea*), variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD: 12.2.83; 29.3.83; 11.7.83; 10.8.83; 19.11.83; 18.1.84; 17.2.84; 13.6.84-13.8.84; 9.2.85. Number per sample, small.

Breeding: ovigerous females recorded March, May-November.

Diosaccus tenuicornis (Claus, 1863) [Sars, 1906]

Roedean: found frequently, mainly in the summer, amongst algae (Ectocarpales indet., *Cladophora rupestris, C. sericea, Ceramium* sp., *Polysiphonia fucoides*), particularly Ectocarpales indet. and *C. sericea*, variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.9-0.6 m ACD: 25.7.83-8.9.83; 1.5.84 (two specimens only); 14.5.84 (one specimen only); 30.7.84; 12.8.84; 28.8.84. One record at a higher shore level, viz. a single specimen amongst diatom-coated *Ceramium* sp., *F. vesiculosus* belt, *c*. 3.0 m ACD, 26.9.84.

Small-moderate numbers per sample, save twice, when large numbers were found amongst Ectocarpales indet., *c*. 1.1 m ACD, 25.7.83, and diatom-coated *Cladophora sericea*, *c*. 0.6 m ACD, 28.8.84.

Kemp Town: found only twice: amongst Ectocarpales indet. (epiphytic on *Laminaria saccharina* fronds), *Laminaria* belt, *c*. 0.9 m ACD (a few) and *c*. 0.5 m ACD (fairly numerous), 10.8.83.

Breeding: pairs in copula 28.8.84. Ovigerous females recorded May, July, August.

Family **ORTHOPSYLLIDAE**

Orthopsyllus linearis linearis (Claus, 1866) [Lang, 1948; Hamond 1970 as *Orthopsyllus* sp.]

Roedean: found sparingly amongst algae (Ectocarpales indet., *Rhodothamniella floridula, Halurus flosculosus*, *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.)) and rarely in other habitats (*Dynamena pumila*, detrital sandy sediment bound by *Polydora ciliata* chimneys), variously distributed in the *F. serratus* and Rhodophyta belts and the Rhodophyta-*Laminaria* transition, *c*. 1.8-0.7 m ACD: 15.3.83; 10.7.83; 7.10.83; 21.10.83; 3.11.83; 30.12.83; 15.2.84; 1.4.84; 12.7.84; 20.11.84; 8.2.85. Number per sample, 1-3, mostly single specimens.

Kemp Town: found twice: one female amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 19.11.83; two females in a scraping of ascidians (*Morchellium argus* and *Molgula cf. socialis*) from a concrete vertical (dismantled railway), *c*. 0.9 m ACD, 31.7.84.

Breeding: single ovigerous females recorded 10.7.83 and 31.7.84.

Family **PELTIDIIDAE**

Alteutha interrupta (Goodsir, 1845) [Sars, 1904; Huys *et al*., 1996]

Roedean: found twice amongst *Sertularia argentea* heavily laden with detrital sandy sediment, *Laminaria* belt, *c*. 0.5 m ACD: 14.4.84 (one ovigerous female); 14.5.84 (a pair in copula and two ovigerous females).

Kemp Town: a single ovigerous female in a scraping of *Dynamena pumila* and *Sertularella gaudichaudi* from a landward-facing concrete vertical (dismantled railway), *c*. 0.9 m ACD, 31.7.84.

Ovingdean: two ovigerous females amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 28.9.84.

Alteutha oblonga (Goodsir, 1845) [Sars, 1904 as *A. depressa*; Huys *et al*., 1996]

Roedean: found six times: a single specimen amongst *Laomedea flexuosa*, *F. vesiculosus* belt, *c*. 3.0 m ACD, and another with *Morchellium argus* (small colony*), Laminaria* belt, *c*. 0.6 m ACD, 28.3.83; one amongst *L. flexuosa*, *F. vesiculosus* belt, *c*. 3.1 m ACD, 14.4.83; two amongst *Corallina officinalis*, Rhodophyta belt, *c*. 1.1 m ACD, 25.6.83; a single specimen amongst *Sertularia argentea*, *Laminaria*

belt, *c*. 0.5 m ACD, 16.3.84, and three ovigerous females similarly situated (more detrital sandy sediment present), 14.5.84.

Kemp Town: single specimens on three occasions: amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 26.6.83; amongst sandy detritus collected from the swash-line on a narrow strip of sand interposed between the lower boundary of the shingle beach and the *Mytilus*-covered rocks to seaward, *c*. 1.3-1.2 m ACD, 30.6.84; amongst *Semibalanus balanoides* encrusting a groyne, *c*. 1.3 m ACD (ALTL), 8.10.84.

Family **TEGASTIDAE**

Parategastes sphaericus sphaericus (Claus, 1863) [Sars, 1904; Huys *et al*., 1996]

Roedean: found sparingly amongst algae (Ectocarpales indet., *Ceramium* sp., *Polysiphonia fucoides*) and hydroids (*Laomedea flexuosa, Dynamena pumila, Sertularia argentea*), variously distributed in the *F. vesiculosus, F. serratus* and Rhodophyta belts and the Rhodophyta-*Laminaria* transition, *c*. 2.7-0.7 m ACD: 25.7.83-7.10.83; 15.2.84; 14.4.84-12.6.84; 10.9.84; 26.9.84; 6.12.84; 8.2.85. Number per sample, 1-4, mostly single specimens.

Kemp Town: found on six occasions in various habitats: Ectocarpales indet., *Laminaria* belt, *c*. 0.9 m ACD, 11.7.83; *P. fucoides*, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 25.8.83; detritus-laden *Sertularia argentea* on a landward-facing concrete vertical (dismantled railway), *c*. 1.0 m ACD, 17.2.84; *Semibalanus balanoides* encrusting a groyne, *c*. 1.3 m ACD, 8.10.84; *Dynamena pumila* on concrete verticals (dismantled railway), *c*. 0.8 m ACD, 24.10.84 and 9.2.85. Number per sample, 1-2.

Breeding: ovigerous females recorded May, August, September, October.

Tegastes clausii Sars, 1910 [Sars, 1904 as *T. longimanus*]

Roedean: found very frequently amongst algae (Ectocarpales indet., *Cladophora rupestris, Plocamium cartilagineum, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides*), predominantly *P. fucoides* (usually supporting epiphytic *Ceramium* sp.), and rarely amongst hydroids (*Dynamena pumila, Sertularia argentea*), variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.0-0.6 m ACD: 11.2.83; 9.8.83-16.3.84; 26.9.84-8.2.85.

Number per sample of alga, small-moderate, the moderate numbers occurring September-November 1983, especially amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.); a large number once amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 0.9 m ACD, 23.9.83. Small numbers in hydroid samples.

Kemp Town: found sporadically amongst *Polysiphonia fucoides* (usually supporting epiphytic *Ceramium* sp.) and rarely amongst hydroids (*Dynamena pumila, Sertularella gaudichaudi, Sertularia argentea*), variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.3-0.5 m ACD: 12.2.83; 17.3.83; 29.3.83; 10.8.83; 25.8.83; 19.11.83; 18.1.84; 15.5.84; 11.9.84; 24.10.84; 9.2.85.

Number per sample of alga, small-moderate, the moderate numbers occurring February 1983 and October 1984 amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.); a large number once amongst *P. fucoides*, *c*. 1.0 m ACD, 25.8.83. Small numbers in hydroid samples.

Ovingdean: several specimens found twice amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.): Rhodophyta belt, *c*. 1.0 m ACD, 3.11.83; Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 28.9.84.

Breeding: ovigerous females recorded August-March with a single specimen in May (Kemp Town, 15.5.84).

Family **DACTYLOPUSIIDAE**

Dactylopusia tisboides (Claus, 1863) [Sars, 1905] (Representative specimens examined by Dr R. Hamond)

Roedean: occurred quite frequently August-November 1983, especially September and October, but only twice in 1984 as single specimens September and December. Found mainly amongst algae (Ectocarpales indet., *Polysiphonia fucoides* (usually supporting epiphytic *Ceramium* sp.)) and rarely amongst hydroids (*Laomedea flexuosa, Sertularia argentea*), variously distributed in the *F. serratus* and Rhodophyta belts and the Rhodophyta-*Laminaria* transition, *c*. 1.9-0.7 m ACD: 24.8.83-3.11.83; 26.9.84; 6.12.84. Number per sample, 1-2, with 6 occurring in a sample of *P. fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 1.1 m above CD, 24.8.83, and 10 or a few more twice in samples of Ectocarpales indet., *c*. 1.9 and *c*. 0.8 m ACD respectively, 8.9.83.

Kemp Town: found six times in various habitats: Ectocarpales indet. and *Polysiphonia fucoides*, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 25.8.83; *P. fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 1.0 m ACD, 19.11.83; *Sertularia argentea* suspended from the underside of a concrete overhang (dismantled railway), *c*. 0.8 m ACD, 3.3.84; *P. fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 1.0 m ACD, 11.9.84; *Semibalanus balanoides* encrusting a groyne, *c*. 1.3 m ACD, 8.10.84. Number per sample, 1-2.

Breeding: ovigerous females recorded August and September.

Dactylopusia vulgaris dissimilis Brian, 1921 [Lang, 1948 as *Dactylopodia*]

Roedean: occurred frequently, especially 1984 in the spring. Found in diverse habitats (Ectocarpales indet., *Cladophora sericea, Rhodothamniella floridula, Ceramium* sp., *Polysiphonia fucoides, Laomedea flexuosa, Dynamena pumila, Sertularia argentea*, barnacles), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD: 11.2.83; 11.6.83; 25.6.83; 25.7.83; 7.10.83-30.12.83; 15.2.84-23.10.84; 4.1.85; 12.1.85; 8.2.85. A single record at a higher shore level, viz. one female in a scraping of *Gelidium pusillum* and *Ceramium* sp. from a hollow in the west face of a groyne, *c*. 4.7 m ACD, 26.11.83. Number per sample, 1-a few.

Kemp Town: eight records only: amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Mytilus/Palmaria belt, *c*. 1.1 m ACD, 12.2.83, and the *Laminaria* belt, *c*. 0.6 m ACD, 29.3.83; amongst Ectocarpales indet., *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 26.6.83; amongst Ectocarpales indet., *c*. 1.0 m ACD, *Polysiphonia fucoides*, *c*. 0.9 m ACD and *Hartlaubella gelatinosa*, *c*. 1.1 m ACD, 2.5.84; amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 0.9 m ACD, 15.5.84; amongst Ectocarpales indet. on a storm-damaged groyne, *c*. 1.5 m ACD, 2.6.84. Number per sample, 1-a few.

Breeding: ovigerous females recorded January, March, May-August, October.

Diarthrodes nobilis (Baird, 1845) [Sars, 1906 as *Westwoodia*]

Roedean: a commonly occurring species amongst algae (Ectocarpales indet., *Corallina officinalis, Gracilaria verrucosa, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides, Rhodomela confervoides*), predominantly *P. fucoides* (supporting epiphytic *Ceramium* sp.), variously distributed in the *F. vesiculosus* (rare), *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.6-0.5 m ACD: 28.3.83;

12.5.83; 25.7.83-8.2.85. Number per sample, small-moderate, the moderate numbers occurring amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), September-December 1983.

Kemp Town: found seven times amongst algae (once amongst Ectocarpales indet. epiphytic on a *Laminaria saccharina* frond, and six times amongst *Polysiphonia fucoides* (three of the samples supporting epiphytic *Ceramium* sp.)), variously distributed in the *Mytilus/Palmaria-Laminaria* transition and the Laminaria belt, *c*. 1.0-0.5 m ACD: 10.8.83 (twice); 25.8.83; 19.11.83; 31.7.84; 13.8.84; 11.9.84. Number per sample, small.

Ovingdean: four specimens amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.0 m ACD, 3.11.83.

Breeding: ovigerous females recorded January-December.

Diarthrodes ponticus ponticus (Kricagin, 1873) [Lang, 1948] (Representative specimens examined by Dr R. Hamond)

Roedean: found eight times amongst *Polysiphonia fucoides* (five of the samples supporting epiphytic *Ceramium* sp.), variously distributed in the *F. serratus*-Rhodophyta transition and the Rhodophyta belt, *c*. 1.3-1.0 m ACD: 21.10.83 (three times); 3.11.83; 1.12.83; 17.12.83; 21.10.84; 20.11.84. Single specimens per sample except 1.12.83 when two were found.

Kemp Town: a single specimen amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 19.11.83.

Breeding: ovigerous females: 21.10.83; 3.11.83; 19.11.83; 1.12.83; 20.11.84.

Paradactylopodia brevicornis (Claus, 1866) [Sars, 1905 as *Dactylopusia*; Lang, 1948] (Representative specimens examined by Dr R. Hamond)

Roedean: occurred frequently and in diverse habitats (Ectocarpales indet., *Rhodothamniella floridula, Corallina officinalis, Ceramium* sp., *Polysiphonia fucoides, Laomedea flexuosa, Dynamena pumila*, barnacles, *Amathia citrina*, detrital sandy sediment bound by *Polydora ciliata* chimneys), variously distributed in the *F. vesiculosus, F. serratus* and Rhodophyta belts, *c*. 3.0-0.8 m ACD: 18.11.83-31.1.84; 16.3.84-12.6.84; 10.9.84-12.1.85. Number per sample, 1-a few.

Kemp Town: single specimens on five occasions: amongst early-growth *Bryopsis* sp., concrete vertical (block detached from storm-damaged groyne), *c*. 1.2 m ACD, 18.1.84; amongst barnacles encrusting steel piling (west face of marina west breakwater root), *c*. 1.6 m ACD, 17.4.84; amongst barnacles encrusting concrete/protruding flint surfaces (groyne), *c*. 3.3 m ACD, 8.10.84, and c. 1.3 m ACD, 11.1.85; in a scraping of *Dynamena pumila*, small *Mytilus edulis* and several small *Molgula cf. socialis* from a concrete vertical (dismantled railway), *c*. 0.8 m ACD, 9.2.85.

Breeding: ovigerous females recorded January, March-May, September-December.

Family **PSEUDOTACHIDIIDAE**

Dactylopodella flava (Claus, 1866) [Sars, 1905; Hicks, 1989 (amendments)]

Roedean: a single female in a rock scraping dominated by sandy detritus and containing tube-dwelling diatoms, *F. vesiculosus* belt, *c*. 2.8 m ACD, 15.3.83.

Kemp Town: a single ovigerous female with *Botrylloides leachii* scraped from a concrete vertical (dismantled railway), *c*. 0.9 m ACD, 13.6.84.

Family **THALESTRIDAE**

Parathalestris clausi (Norman, 1868) [Sars, 1905]

Roedean: found on four occasions: one ovigerous female amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.1 m ACD, 1.12.83; 10 specimens, including four ovigerous females, washed from *F. serratus* (encrusted with bryozoans *Flustrellidra hispida* and *Electra pilosa*), Rhodophyta belt, *c*. 1.0 m ACD, 16.3.84; one ovigerous female amongst *Ceramium* sp. epiphytic on small Chondrus crispus, landward-facing concrete vertical (dismantled railway), *c*. 2.1 m ACD, 10.9.84; one ovigerous female amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.2 m ACD, 7.11.84.

Kemp Town: a single male amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 1.0 m ACD, 13.7.84.

Parathalestris harpacticoides (Claus, 1863) [Sars, 1905]

Roedean: a commonly occurring species, especially in the summer and autumn. Found mainly amongst algae (Ectocarpales indet., *Cladophora rupestris, Rhodothamniella floridula, Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides*), predominantly *P. fucoides* (supporting epiphytic *Ceramium* sp.), and very occasionally amongst hydroids (*Laomedea flexuosa, Dynamena pumila, Sertularia argentea*), variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.9-0.5 m ACD: 28.3.83; 25.6.83-31.5.84; 12.7.84-8.2.85. Number per sample, small, save twice, when moderate numbers were found amongst Ectocarpales indet., *c*. 1.0 m ACD, 24.8.83, and *P. fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 0.9 m ACD, 23.9.83.

Kemp Town: small numbers found sparingly amongst algae (Ectocarpales indet., *Ceramium* sp., *P. fucoides*), variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD: 29.3.83; 11.7.83; 26.7.83; 10.8.83; 19.11.83; 2.4.84-24.10.84. Single specimens (ovigerous females) found amongst *Sertularia argentea* on the downward-facing surface of a concrete overhang (dismantled railway), *c*. 1.0 m ACD, 18.1.84, and *c*. 0.7 m ACD, 9.2.85. One record at a higher shore level, viz. two specimens (including an ovigerous female) amongst Ectocarpales indet. on a storm-damaged groyne, *c*. 1.5 m ACD, 2.6.84.

Ovingdean: found twice amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.): a single specimen, Rhodophyta belt, *c*. 1.0 m ACD, 3.11.83; several specimens, Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 28.9.84.

Breeding: ovigerous females recorded January-December.

Parathalestris hibernica (Brady & Robertson, 1873) [Sars, 1905] (Representative specimens examined by Dr R. Hamond)

Roedean: found twice amongst Ectocarpales indet.: two ovigerous females and several copepodids, *F. serratus* belt, *c*. 1.9 m ACD (MLWN), and two females (one ovigerous), *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 1.5.84.

Parathalestris intermedia Gurney, 1930 [Lang, 1948]

Roedean: a commonly occurring species June-August 1983 and May-August 1984, otherwise scarce. Found mainly amongst algae (Ectocarpales indet., *Cladophora sericea, Ceramium* sp., *Polysiphonia fucoides*), predominantly Ectocarpales indet., and rarely amongst hydroids (*Dynamena pumila, Sertularia argentea*), variously distributed in the *F. vesiculosus*, *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD: 15.3.83; 11.6.83-9.8.83; 1.12.83; 17.12.83; 31.1.84; 14.5.84-10.10.84. One record at a higher shore level, viz. three females and one male amongst detritus-coated *Semibalanus balanoides* encrusting a groyne, *c*. 3.9 m ACD, 15.2.84.

Number per sample of alga, small-large, the moderate-large numbers occurring June-August 1983 and May, August 1984, especially amongst Ectocarpales indet.. Small numbers in hydroid samples.

Kemp Town: occurred frequently in the spring of 1984, especially May, otherwise scarce. Found mainly amongst algae (tube-dwelling diatoms, Ectocarpales indet., *Bryopsis* sp., *Ceramium* sp., *Polysiphonia fucoides*) and rarely in other habitats (*Hartlaubella gelatinosa*, barnacles encrusting a groyne), variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.3-0.5 m ACD: 10.8.83; 23.10.83; 18.1.84; 2.4.84; 2.5.84; 15.5.84; 13.6.84. Three records on a groyne at higher shore levels: one ovigerous female amongst *Semibalanus balanoides*, *c*. 3.3 m ACD, 17.3.83; a small number, including ovigerous females, amongst Ectocarpales indet., *c*. 1.5 m ACD, 2.6.84; two specimens amongst *Semibalanus balanoides*, *c*. 3.3 m ACD, 11.1.85.

Number per sample, small, save once, when a large number occurred amongst diatom-coated Ectocarpales indet., *Laminaria* belt, *c*. 0.8 m ACD, 15.5.84.

Breeding: pairs in copula: 11.6.83; 25.6.83; 25.7.83; 31.5.84; 29.6.84; 30.7.84; 12.8.84; 28.8.84; 10.10.84. Ovigerous females recorded March-August, October (only single specimens in March, April, October).

Phyllothalestris mysis (Claus, 1863) [Sars, 1905]

Roedean: 11 records, seven of which in August 1983. Found amongst algae (Ectocarpales indet., *Bryopsis* sp., *Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides*), variously distributed in the *F. serratus*-Rhodophyta transition, the Rhodophyta belt and the Rhodophyta-*Laminaria* transition, *c*. 1.3-0.7 m ACD: 26.4.83; 9.8.83; 24.8.83; 1.5.84; 12.6.84. A single female in a heterogeneous sample (*Gelidium pusillum, Phymatolithon lenormandii, Hymeniacidon perlevis* (dominant), *Dynamena pumila*, small *Molgula cf. socialis*) scraped from the entrance to a piddock burrow, Rhodophyta belt, *c*. 1.1 m ACD, 18.11.83.

1-2 per sample, save once, when 15 (seven females and eight males) were found amongst *Corallina officinalis* (supporting epiphytic *Ulva lactuca* and *Ceramium* sp.), *c*. 1.1 m ACD, 24.8.83.

Kemp Town: found three times: single ovigerous females amongst Ectocarpales indet. and *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Laminaria belt, *c*. 0.5 m ACD, 10.8.83; a single male amongst *Ceramium* sp. attached to *Mytilus edulis* on a concrete ledge adjoining the marina west breakwater root, *c*. 3.3 m ACD, 25.8.83.

Breeding: ovigerous females recorded May and August.

Thalestris longimana Claus, 1863 [Sars, 1905]

Roedean: common February-June (mainly copepodids in June); sparing in other months (mainly copepodids). Found chiefly amongst algae (Ectocarpales indet., *Cladophora rupestris, Bryopsis* sp., *Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides, P. nigra, Rhodomela*

confervoides), predominantly *P. fucoides* (supporting epiphytic *Ceramium* sp.), and intermittently amongst hydroids (*Hartlaubella gelatinosa, Laomedea flexuosa, Dynamena pumila, Sertularia argentea, Kirchenpaueria pinnata*), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD, most numerous at levels below the *F. serratus*-Rhodophyta transition, *c.* 1.3 m ACD (ALTL): 11.2.83-25.7.83; 23.9.83; 7.10.83; 1.12.83-28.8.84; 23.10.84-19.12.84; 8.2.85.

Number per sample of alga, small-large, the largest numbers occurring March and April amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.). Small numbers in hydroid samples, save twice, when moderate numbers occurred amongst *Sertularia argentea*, *c*. 0.5 m ACD, 16.3.84 and 14.4.84.

Kemp Town: seasonally common with records paralleling Roedean. Found chiefly amongst algae (Ectocarpales indet., *Desmarestia aculeata, Bryopsis* sp., *Ceramium* sp., *Polysiphonia fucoides, P. nigra*) and rarely amongst hydroids (*Hartlaubella gelatinosa, Sertularia argentea*), variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.3-0.5 m ACD: 12.2.83-11.7.83; 18.1.84-13.6.84; 11.9.84; 9.2.85. Twice recorded at higher shore levels: a single ovigerous female amongst *Ceramium* sp. attached to *Mytilus edulis* on a concrete ledge adjoining the marina west breakwater root, *c*. 3.3 m ACD (MTL = 3.5), 3.3.84; occasional ovigerous females and frequent copepodids amongst Ectocarpales indet., storm-damaged groyne, *c*. 1.5 m ACD, 2.6.84.

Number per sample of alga, small-large, the largest numbers occurring March and April amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.) as at Roedean. Small numbers in hydroid samples.

Ovingdean: several, including an ovigerous female, amongst *Rhodomela confervoides*, Laminaria belt, *c*. 0.5 m ACD, 10.3.85.

Breeding: pairs in copula: 17.3.83; 28.3.83; 29.3.83; 14.4.83; 15.4.83; 1.4.84; 31.5.84. Ovigerous females rare February, common March-May, rather sparing June (the few mid-late June specimens bearing small ovisacs).

Order CYCLOPOIDA

Family **BOTRYLLOPHILIDAE**

Botryllophilus sarsi Ooishi, 2002 [Sars, 1921 as *brevipes*; Gotto, 1993 as *brevipes*]

Roedean: a single female, 1.9 mm long, in a scraping of *Halichondria panicea, Hymeniacidon perlevis, Dynamena pumila* and the ascidian *Botrylloides leachii* (small colony) from the downward-facing surface of a concrete overhang (collapsed section of a groyne), *c.* 1.1 m ACD, 12.1.85.

Known *B. sarsi* hosts include *Botrylloides leachii* (Gotto 1993).

Family **LICHOMOLGIDAE**

Lichomolgus canui Sars, 1917 [Sars, 1917; Gotto, 1993]

Kemp Town: five specimens, including two ovigerous females, in a scraping of ascidians (*Morchellium argus* and *Molgula cf. socialis*) from a concrete vertical (dismantled railway), *c*. 0.9 m ACD, 31.7.84.

Known *L. canui* hosts include *Molgula manhattensis* (Gotto 1993).

Family **NOTODELPHYIDAE**

Doropygus pulex pulex Thorell, 1859 [Sars, 1921; Gotto, 1993]

Kemp Town: a single female, 1.8 mm long, in a scraping of *Dynamena pumila, Dendrodoa grossularia* (frequent young specimens up to 5 mm long) and *Molgula cf. socialis* (several young specimens up to 3 mm in diameter) from a landward-facing concrete vertical (dismantled railway), *c*. 0.9 m ACD, 19.10.82.

Known *D. pulex* hosts include *Dendrodoa grossularia* (Gotto 1993).

Subclass **THECOSTRACA**

Infraclass CIRRIPEDIA

Superorder THORACICA

Order SESSILIA Acorn barnacles

Suborder BALANOMORPHA

Note. Members of this suborder were monitored November 1981 to March 1985.

Family **ARCHAEOBALANIDAE**

Semibalanus balanoides (Linnaeus, 1767) [Southward, 1976: 1025; Hayward & Ryland, 2017: 302]

Roedean: the dominant barnacle. Patches and extensive sheets on groynes (concrete with/without embedded flints), especially their vertical surfaces, *c*. 5.5-1.1 m ACD, with a scattering of individuals as high as *c*. 5.8 m ACD (MHWN = 5.1); the barnacle line (upper limit of barnacles in quantity), *c*. 5.5 m ACD, variably obscured/suppressed by *Fucus spiralis* and by downshore extension from the littoral fringe (Lewis 1964) of *Blidingia minima*. Conspicuous incrustations on the foundation blocks of the dismantled railway (concrete with embedded flints) which ran along the chalk platform a little above *c*. 1.9 m ACD (MLWN). Common on embedded flints protruding from the chalk and on loose but relatively stable flint cobbles in the *Fucus vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.6 m ACD (MLWS); distribution at higher shore levels restricted to groynes due to the predominantly shingle beach overlying the chalk platform down to *c*. 3.3 m ACD (MTL = 3.5). Patches frequent on the chalk itself in the *F. vesiculosus* belt and the *F. vesiculosus*-*F. serratus* transition, *c*. 3.1-2.3 m ACD, but increasingly scarce across the *F. serratus* belt down to the *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), and virtually confined to embedded and loose flints at lower levels. Common on *Patella vulgata* across its range.

Less than 0.1% infected with *Hemioniscus balani* (q.v.).

Kemp Town: artificial structures even more important than at Roedean due to shingle overlying the chalk platform down to *c*. 1.3 m ACD (ALTL). Conspicuous on the groyne (concrete with embedded flints) *c*. 100 m west of the marina west breakwater root, *c*. 5.6-1.2 m ACD, with a scattering of individuals as high as *c*. 5.9 m ACD, the most extensive incrustations occurring on vertical faces above *c*. 3.3 m ACD, patchier at lower levels due to prevalence of *Mytilus edulis*; the barnacle line, *c*. 5.6 m ACD, variably obscured/suppressed principally by *Blidingia minima* (*Fucus spiralis* sparse and stunted compared to that found at Roedean). Extensive sheets on the steel piling that partly constituted the west

face of the marina west breakwater root, *c*. 5.5-3.3 m ACD, extending locally to *c*. 5.8 m ACD on landward-facing surfaces; patchy at lower levels down to *c*. 1.5 m ACD due to prevalence of *Mytilus edulis*. Very extensive sheets on the concrete caissons constituting the marina west breakwater with a distinctive barnacle line, the line on the curved landward face of the first caisson, *c*. 5.8 m ACD. Common on *Patella vulgata* and *Mytilus edulis*, the former recorded on browsing excursions on the west face of the marina west breakwater root on the concrete above the steel piling frequently transporting barnacles as high as *c*. 6.3 m ACD and occasionally as high as *c*. 6.6 m ACD (MHWS = 6.5). On the chalk platform, *S. balanoides* was recorded only very sparingly with incrustations restricted to *Mytilus edulis*, embedded flints protruding from the chalk and loose but relatively stable flint cobbles, variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.8 m ACD.

Less than 0.3% infected with *Hemioniscus balani* (q.v.).

Breeding: 1982-1985: nauplii present in the mantle cavity, January-March; settlement April-May.

Family **AUSTROBALANIDAE**

Austrominius modestus (Darwin, 1854) [Southward, 1976: 1025 as *Elminius*; Hayward & Ryland, 2017: 302]

Roedean: sparsely distributed over the same vertical range as *Semibalanus balanoides*; commonly epizoic on the latter.

Kemp Town: rather more thinly scattered than at Roedean over the same vertical range as *S. balanoides*; commonly epizoic on the latter.

Breeding: nauplii present in the mantle cavity in all seasons; settlement generally overlooked but noted as recent on the following occasions: 26.7.83; 21.10.83; 30.7.84; 12.8.84; 6.10.84.

Class **MALACOSTRACA**

Subclass **EUMALACOSTRACA**

Superorder PERACARIDA

Order CUMACEA

Family **BODOTRIIDAE**

Bodotria scorpioides (Montagu, 1804) [Jones, 1976: 20]

Roedean: single females found twice in the Rhodophyta belt, *c*. 0.8 m ACD: in a rock scraping containing sandy detritus and mud chimneys constructed by *Polydora ciliata*, 21.7.82; amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), 31.10.82.

Order TANAIDACEA

Family **TANAIDAE**

Tanais dulongii (Audouin, 1826) [Holdich & Jones, 1983: 39]

Roedean: found sparingly amongst algae (*Rhodothamniella floridula* (binding sandy detritus), *Gelidium pusillum, Corallina officinalis*) and barnacles (sampled mainly from groynes), variously distributed, *c*. 4.9-1.0 m ACD (MHWN = 5.1): 24.11.81; 30.12.81; 9.3.82; 13.11.82-12.1.83; 26.11.83-31.1.84; 23.10.84; 4.1.85. Number per sample, 1-4, mostly single specimens.

Kemp Town: found quite frequently amongst barnacles (groyne and marina west breakwater root), *c*. 4.5-2.3 m ACD: 1.11.82; 29.3.83; 26.7.83; 23.10.83; 2.12.83; 17.4.84; 14.7.84; 8.10.84; 11.1.85; 24.1.85. Barnacles unsampled prior to November 1982. Number per sample of *c*. 20-30 adult barnacles, 1-6.

Breeding: ovigerous females recorded 1.11.82 and 2.12.83.

Order MYSIDA Opossum shrimps

Family **MYSIDAE**

Note. Members of this family were monitored 1982-1984, but probably comparatively under-recorded in 1982.

Subfamily LEPTOMYSINAE

Leptomysis lingvura (Sars, 1866) [Tattersall & Tattersall, 1951: 295; Makings, 1977: 589]

Roedean: frequent occurrences in pools and channels variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.0-0.6 m ACD: 21.7.82; 26.5.83; 10.7.83; 24.8.83; 31.5.84-28.8.84. Number per pool/channel, *c*. 30-50, occasionally several hundred, maximal July-August (though undetected August 1982, most likely overlooked).

Kemp Town: frequent occurrences in pools variously distributed in the *Mytilus/Palmaria-Laminaria* transition and the *Laminaria* belt, *c*. 1.0-0.6 m ACD: 22.7.82; 26.6.83; 10.8.83; 31.7.84; 13.8.84; 29.8.84. Number per pool, several-50 or so, with numbers exceeding 100, 22.7.82.

Breeding: brooding females on all occasions May-August. A female collected during the post-dawn period 31.5.84 liberated 20 young in the specimen tube.

Leptomysis mediterranea Sars, 1877 [Tattersall & Tattersall, 1951: 292; Makings, 1977: 589]

Roedean: found sparingly in pools variously distributed in the *F. serratus* and Rhodophyta belts, *c*. 2.0-1.0 m ACD: 25.6.83; 1.5.84; 14.5.84; 29.6.84; 12.8.84. Number per pool, 1-a few.

Kemp Town: scarce in pools in the *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD: 22.7.82; 13.8.84; 29.8.84. Number per pool, 1-a few.

Breeding: brooding females recorded May-August (single specimens save one occasion indicated): (22.7.82, empty marsupium); 1.5.84 (ovigerous); 14.5.84 (hatched young); 29.6.84 (two with hatched young); 12.8.84 (hatched young); 13.8.84 (hatched young); 29.8.84 (ovigerous)

Subfamily MYSINAE

Praunus flexuosus (Müller, 1776) [Tattersall & Tattersall, 1951: 378; Makings, 1977: 591] Chamelion shrimp

Roedean: a single female with young in marsupium amongst *Ulva lactuca* in a pool, Rhodophyta belt, *c*. 0.8 m ACD, 9.8.83.

Subfamily SIRIELLINAE

Siriella armata (Milne Edwards, 1837) [Tattersall & Tattersall, 1951: 145; Makings, 1977: 587]

Roedean: frequently recorded in pools variously distributed in the *F. serratus* and Rhodophyta belts, *c*. 2.0-0.8 m ACD: 4.9.82; 26.5.83-24.8.83; 31.5.84-12.8.84. Number per pool, several-40 or so; maximal June-August, particularly widespread and numerous 24.8.83.

Kemp Town: sporadic occurrences in pools variously distributed in the *Mytilus/Palmaria-Laminaria* transition and the *Laminaria* belt, *c*. 1.0-0.6 m ACD: 22.7.82; 19.9.82 (also just below the low water mark); 11.7.83; 10.8.83. A few in a small pool in the *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 25.8.83. Number per pool, several-40 or so, save once, when 80 or more were trapped in a pool, *c*. 0.9 m ACD, 19.9.82, and on the same occasion, directly downshore, large numbers hovered just below the low water mark, *c*. 0.6 m ACD, accompanied by a Fifteen-spined stickleback, *Spinachia spinachia*, feeding on them.

Breeding: brooding females on all occasions May-September.

Order ISOPODA

Note. Members of this order were monitored March 1981-February 1985 at Roedean and June 1981-February 1985 at Kemp Town.

Suborder CYMOTHOIDA

Family **HEMIONISCIDAE**

Hemioniscus balani Buchholz, 1866 [Nierstrass & Brender à Brandis, 1926: 12; Naylor, 1972: 79]

Rare in *Semibalanus balanoides*; undetected in the much less prevalent *Austrominius modestus*. Samples of barnacles containing 20 or more adult *S. balanoides* were collected from various levels across the eulittoral through the seasons.

Roedean: out of 153 samples totalling *c*. 3060 (+) individual *S. balanoides*, 11.11.81-4.3.85, only two (from groynes) were found parasitized by *H. balani* (< 0.1%): one male, *c*. 1.9 m ACD (MLWN), 28.12.82; one male, *c*. 3.3 m ACD, 12.7.84.

Kemp Town: out of 64 samples totalling *c*. 1280 (+) individual *S. balanoides*, 1.11.82-24.1.85, only four (from the groyne *c*. 100 m west of the marina west breakwater root) were found parasitized by *H. balani* (< 0.3%): one male, *c*. 2.1 m ACD, 26.7.83; 109 or more free larvae, presumably released during/after sampling (associated with a pure *S. balanoides* sample), *c*. 5.1 m ACD (MHWN), 23.10.83; one of each sex, the female full of embryos, in separate *S. balanoides* specimens in the same sample, *c*. 2.3 m ACD, 11.1.85.

Suborder SPHAEROMATIDEA

Family **SPHAEROMATIDAE**

Sphaeroma serratum (Fabricius, 1787) [Naylor, 1972: 32]

Roedean: one male in a crevice in the barnacle-encrusted east face of a groyne, *c*. 4.0 m ACD (MTL = 3.5), 28.9.81.

Suborder VALVIFERA

Family **IDOTEIDAE**

Idotea balthica (Pallas, 1772) [Naylor, 1972: 40 as *baltica*]

Roedean: found in small numbers, mainly in the autumn, including males up to 32 mm and females up to 16 mm long, amongst non-local drift algae (*Ascophyllum nodosum, F. vesiculosus, Himanthalia elongata*), intertidally-attached algae (*Cladostephus spongiosus, F. serratus, Corallina officinalis, Cystoclonium purpureum, Ceramium* sp., *Polysiphonia fucoides*), and rarely in other habitats (swimming in pools (drift algae in vicinity), once under a stone), variously distributed in the *F. vesiculosus, F. serratus* and Rhodophyta belts, *c*. 3.0-0.8 m ACD: 4.10.82; 15.10.82; 31.10.82; 13.12.82; 26.5.83; 7.10.83; 6.12.84.

Kemp Town: sparingly associated with drift algae deposited at and a little below the lower boundary of the shingle beach, *c*. 1.3-1.2 m ACD, 7.8.82 and 19.10.82, and amongst intertidally-attached *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.) variously distributed in the *Mytilus/Palmaria* and *Laminaria belts*, *c*. 1.1-0.7 m ACD: 19.10.82; 1.11.82; 30.11.82; 29.12.82; 27.4.83; 14.5.83.

Breeding: ovigerous females recorded 4.10.82 (Roedean) and 1.11.82 (Kemp Town).

Idotea emarginata (Fabricius, 1793) [Naylor, 1972: 42]

Roedean: a single ovigerous female, 19 mm long, in company with *I. balthica*, amongst non-local drift algae (mixed *Ascophylum nodosum, F. vesiculosus, Himanthalia elongata*), at the edge of flood-tide, *c*. 1.9 m ACD (MLWN), 7.10.83.

Idotea granulosa Rathke, 1843 [Naylor, 1972: 42]

Roedean: a very common species found amongst 89% of *Polysiphonia fucoides* samples (n = 200) taken at fortnightly intervals, March 1981-February 1985, and 73% of *Corallina officinalis* samples (n = 67) collected through the seasons over the same period (including Ceramium sp. commonly epiphytic on both), amongst more intermittently sampled algae (Ectocarpales indet., *Cladostephus spongiosus, F. serratus, Cladophora rupestris, Ulva* sp., *Gelidium pusillum, Gracilaria verrucosa, Plocamium cartilagineum, Cystoclonium purpureum, Ceramium* sp(p), *Halurus flosculosus, Laurencia pinnatifida, Rhodomela confervoides*), and rarely amongst the hydroid *Sertularia argentea* and stones, variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.3-0.5 m ACD.

Six records at higher shore levels in the *F. vesiculosus* belt, *c*. 3.0-2.6 m ACD: a single specimen amongst *Ulva* sp., 28.8.81; several amongst tube-dwelling diatoms, 15.3.83, and *Ceramium* sp. epiphytic on young *F. serratus*, 10.5.83; single specimens under recumbent *F. vesiculosus* and *F. serratus* fronds, 25.5.83, 17.12.83 and 6.10.84.

Number (including a high proportion of juvenile stages) per sample of alga, 1-30, with up to 60 or more occurring rarely in the autumn. Small numbers amongst *Sertularia argentea* and stones including a single male, 18 mm long, the largest specimen recorded, amongst stones in a runnel, *c*. 1.5 m ACD, 12.7.84.

Kemp Town: algal habitat restricted by the shingle beach overlying the chalk platform down to *c*. 1.3 m ACD (ALTL) and dominance of the lower eulittoral bedrock, where not scoured by mobile sand, by *Mytilus edulis* supporting *Palmaria palmata*. Found amongst 86% of *Polysiphonia fucoides* samples (n = 92) including *Ceramium* sp. (its common epiphyte) collected through the seasons, May 1981-February 1985, amongst sporadically sampled algae (Ectocarpales indet. (epiphytic on *Laminaria saccharina* and *Palmaria palmata* in the summer), *Desmarestia aculeata*, *Ceramium* spp. (epiphytic on *Cladostephus spongiosus, Chondrus crispus* and attached to *Mytilus edulis*)), and rarely in other habitats (single records amongst *Sertularia argentea*, mussels and under a stone), variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD.

Four records at a higher shore level in the *Mytilus* belt, *c*. 3.3 m ACD: small numbers amongst *Ceramium* spp. attached to *M. edulis* at the upper limit of mussels in quantity on a concrete ledge adjoining the west face of the marina west breakwater root: 25.1.82; 7.6.82; 13.1.83; 20.12.84.

Number (including a high proportion of juvenile stages) per sample of alga, 1-20, with up to 30 or a few more occasionally occurring in 1981. In other habitats: one male, 13 mm long, under a stone, 18.8.81; one male, 9 mm long, amongst *M. edulis*, 26.2.82; a juvenile amongst *Sertularia argentea*, 29.12.82.

Breeding: brooding females recorded in all seasons.

Idotea pelagica Leach, 1816 [Naylor, 1972: 44]

Kemp Town: one juvenile, 4 mm long, amongst *Semibalanus balanoides* encrusting the south-facing vertical of a groyne head, *c*. 2.1 m ACD, 26.7.83; one female, 6 mm long, in the same situation, *c*. 2.3 m ACD, 11.1.85.

Stenosoma lancifer Miers, 1881 [Naylor, 1972: 46 as *Synisoma*]

Roedean: a single male, 11 mm long, seeking refuge amongst the distal portions of *F. serratus* fronds hanging immersed in a pool from thalli attached to the surrounding rocks, Rhodophyta belt, *c*. 1.0 m ACD, 28.12.82.

Ovingdean: three records of single individuals: a juvenile, 2.9 mm long, amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.0 m ACD, 3.11.83; one female, 7.5 mm long, amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 28.9.84; one male, 8.0 mm long, amongst *Cystoclonium purpureum*, *Laminaria* belt, *c*. 0.5 m ACD, 10.3.85.

Suborder ASELLOTA

Family **JANIRIDAE**

Jaera (Jaera) albifrons albifrons Leach, 1814 [Naylor, 1972: 54 as *Jaera albifrons*]

Roedean: a single male (peraeopods 6-7 with diagnostic carpal lobe) on the underside of a chalk cobble in a gulley, *F. vesiculosus* belt, c. 2.5 m ACD, 30.7.84.

Suborder ONISCIDEA

Family **LIGIIDAE**

Ligia oceanica (Linnaeus, 1767) [Edney, 1954: 10] Sea slater

Roedean: a common species recorded April-October 1981-1984. Observations were confined mainly to the post-dawn period when adults had mostly retreated into crevices in groynes and the sea-wall formed by erosion of mortar, *c*. 8.0-7.0 m ACD (MHWS = 6.5). The occasional adult was seen on top of the sea-wall, *c*. 9.0 m ACD, November, probably disturbed by heavy seas, but undetected December-March. Of the few checks made at dusk, large numbers of adults were conspicuous at the entrances to crevices in the east face of a groyne, presumably in readiness for nocturnal feeding excursions, *c*. 7.5 m ACD, 10.5.83 and 12.4.84.

Young, up to *c*. 10 mm long, were regularly out and about on groynes during the post-dawn period, dispersed across the Cyanophyta and *Blidingia/Porphyra* belts of the littoral fringe and penetrating as far as the upper *Fucus spiralis* astride the barnacle line, *c*. 7.5-5.5 m ACD: 15.6.81-28.9.81; 23.5.82-4.9.82; 5.4.1983-18.10.83; 8.6.84-26.9.84. Maximum numbers apparent in July and August.

Kemp Town: occurred as a local population restricted to the groyne *c*. 100 m west of the marina west breakwater root where the only suitable crevices to be found were on its east face, *c*. 8.0-7.0 m ACD. Records approximately paralleled Roedean with the addition of a January adult at dusk in the entrance to a crevice, *c*. 7.0 m ACD, 18.1.84.

Young, up to *c*. 10 mm long, were conspicuous during the post-dawn period across the littoral fringe and penetrating the upper eulittoral (barnacle line, *c*. 5.6 m ACD) as far as *c*. 5.2 m ACD: 23.6.82-1.11.82; 26.6.83-10.8.83; 2.6.84-8.10.84. Maximum numbers apparent in July.

Ovingdean: occasional checks at this locality indicated populations similar to Roedean.

Breeding: an adult Roedean female, 25 mm long (the only adult sampled), 15.6.81, carried a small brood of 31 juveniles averaging 3 mm long suggesting that some had already been liberated or lost, as the number per brood described by Nicholls (1931) averaged *c*. 80 with a range of 40-100 or more. Recently released 3 mm Roedean juveniles were recorded June-September with specimens as small as 2.7 mm sampled 21.6.84 and 12.7.84; 3 mm Kemp Town juveniles were recorded June-July.

Family **HALOPHILOSCIIDAE**

Halophiloschia couchii (Kinahan, 1858) [Edney, 1954: 28] Littoral woodlouse

Roedean: 80 or more specimens, including adults and juveniles, in company with *Orchestia mediterranea, Halorates reprobus, Coelopa (Fucomyia) frigida* and *Thoracochaeta zosterae*, were found amongst/near algal debris (mainly *Palmaria palmata* and *Laminaria saccharina*) on top of the sea-wall recently swept up from the adjacent predominantly shingle beach by heavy seas, (all within an area of several sq. m, *c*. 150 m west of the regular monitoring site), *c*. 9.0 m ACD, 26.11.83. A sample comprised eight females and seven males.

Order AMPHIPODA

Note. Members of this order were monitored March 1981-February 1985 at Roedean and June 1981-February 1985 at Kemp Town.

Suborder AMPHILOCHIDEA

Family **ATYLIDAE**

Nototropis guttatus Costa, 1853 [Lincoln, 1979: 446 as *Atylus*]

Roedean: found quite frequently amongst algae (Ectocarpales indet., *Corallina officinalis, Ceramium sp., Halurus flosculosus, Polysiphonia fucoides*) variously distributed in the *F. serratus* and Rhodophyta belts and the Rhodophyta-Laminaria transition, *c*. 1.6-0.7 m ACD: 30.4.81; 18.6.81; 19.7.81; 6.5.82; 23.5.82; 6.6.82; 26.4.83; 11.6.83; 25.6.83; 10.7.83; 21.10.83; 1.5.84; 12.7.84; 30.7.84; 12.8.84; 10.10.84. Number per sample, 1-5, and on one occasion 8 amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 1.0 m ACD, 23.5.82. A single male amongst *Sertularia argentea*, *c*. 1.3 m ACD (ALTL), 11.6.83.

Kemp Town: found twice amongst *P. fucoides*: two small females, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 19.6.81; one male and two juveniles, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 13.8.84.

Breeding: ovigerous females recorded April-June.

Nototropis swammerdamei (Milne Edwards, 1830) [Lincoln, 1979: 440 as *Atylus swammerdami*]

Roedean: found quite frequently amongst algae (Ectocarpales indet., *Laminaria saccharina* (supporting epiphytic Ectocarpales indet. and *Ceramium* sp.), *Ulva* sp., *Cladophora sericea, Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides, Rhodomela confervoides*) variously distributed in the *F. serratus*-Rhodophyta transition and the Rhodophyta and *Laminaria* belts, *c*. 1.3-0.6 m ACD: 30.4.81; 17.8.81; 14.10.81; 8.4.82; 6.6.82; 22.6.82; 6.7.82; 15.10.82; 29.11.82; 11.6.83; 3.11.83; 30.7.84-26.9.84; 7.11.84; 20.11.84; 19.12.84. Number per sample, 1-3. Twice recorded in other habitats: one small female under a stone, *c*. 1.0 m ACD, 29.8.81; two females amongst *Sertularia argentea*, *c*. 0.5 m ACD, 14.4.84.

Kemp Town: found on seven occasions amongst algae (mainly *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), exceptions indicated) variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD: 3.6.81; 18.8.81 (*Ceramium* sp. epiphytic on *Chondrus crispus*); 5.9.82; 10.8.83; 15.5.84; 13.8.84; 29.8.84 (Ectocarpales indet. epiphytic on *Laminaria saccharina*). Number per sample, 1-3. One female with young in marsupium amongst *Hartlaubella gelatinosa* scraped from a concrete/embedded flint block (dismantled railway) in a sandy area, *c*. 1.0 m ACD, 25.4.82.

Breeding: ovigerous females recorded April, June, August-November; a single female with hatched young, 25.4.82 (Kemp Town, detailed above).

Family **DEXAMINIDAE**

Dexamine spinosa (Montagu, 1813) [Lincoln, 1979: 450]

Roedean: found frequently amongst algae (Ectocarpales indet., *Cladophora rupestris, C. sericea, Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides*) and rarely in other habitats (*Hartlaubella gelatinosa, Sertularia argentea, Bugulina turbinata*, under a stone) variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.1-0.5 m ACD, chiefly below *c*. 1.3 m ACD (ALTL): 15.9.81; 14.10.81; 27.10.81; 6.7.82; 4.9.82; 22.9.82; 15.10.82; 31.10.82; 10.7.83-3.11.83; 15.2.84; 30.7.84-20.11.84. Number per sample of alga, 1-5, with higher numbers up to 11 or a few more occurring 10.7.83, 23.9.83, 28.8.84, 10.10.84; one record of 65 juveniles amongst *Cladophora* sp., *c*. 0.6 m ACD, 28.8.84. Single specimens in other habitat samples.

Kemp Town: found on five occasions amongst algae: *Ceramium* sp. epiphytic on *Chondrus crispus*, Mytilus/Palmaria belt, *c*. 1.1 m ACD, 30.8.81; *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *Laminaria* belt, *c*. 0.7 m ACD, 5.10.82; Ectocarpales indet. epiphytic on *L. saccharina* fronds, *Laminaria* belt, *c*. 0.9 and 0.5 m ACD, 10.8.83, and *c*. 0.8 m ACD, 29.8.84; *Polysiphonia fucoides*, *c*. 1.0 m ACD, 11.9.84. Number per sample, 1-a few.

Ovingdean: one female amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.0 m ACD, 3.11.83.

Breeding: ovigerous females recorded August-September; one female with hatched young, 15.9.81 (Roedean).

Dexamine thea Boeck, 1861 [Sars, 1894: 477, pl. 168]

Note. Differed from Lincoln's 1979 p. 450 description in the female antenna 1 being always longer than antenna 2 rather than subequal; specimens collected were exclusively female.

Roedean: found sparingly amongst/on algae (mainly Ectocarpales indet., exceptions indicated) variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.0-0.6 m ACD: 1.8.81 (on *Laminaria saccharina* frond supporting *Kirchenpaueria pinnata* remnants and a *Jassa falcata* colony); 22.6.82 (*Polysiphonia fucoides* supporting epiphytic *Ceramium* sp.); 21.7.82 (*Ceramium* sp. supporting *Orthopyxis integra*); 11.6.83; 25.6.83; 10.7.83; 9.8.83; 1.5.84; 31.5.84; 12.6.84; 12.7.84 (*P. fucoides* as well as Ectocarpales indet.). Number per sample, 1-3. Found in two samples of *Hartlaubella gelatinosa*, *c*. 1.3 and 1.1 m ACD, 6.5.82, two females (one ovigerous) with each sample.

Kemp Town: found on five occasions amongst algae (Ectocarpales indet., one exception indicated) variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.8 m ACD: 23.6.82 (*Polysiphonia fucoides* supporting epiphytic *Ceramium* sp.); 11.7.83; 10.8.83; 15.5.84; 13.6.84. Number per sample, 1-3. One female amongst *Dynamena pumila* epizoic on *Mytilus edulis*, *c*. 1.1 m ACD, and two ovigerous females amongst *Obelia longissima*, *c*. 1.0 m ACD, 24.5.82.

Breeding: ovigerous females recorded May, June, August.

Tritaeta gibbosa (Spence Bate, 1862) [Lincoln, 1979: 452]

Roedean: one female with *Hymeniacidon perlevis*, Rhodophyta belt, *c*. 0.9 m ACD, 8.4.82; five females in surface burrows in *H. perlevis*, and one *Colomastix pusilla* female (q.v.) in the same sample, Rhodophyta belt, *c*. 0.9 m ACD, 1.5.84.

Kemp Town: one female accompanied by one *C. pusilla* female with *Suberites domuncula*, *Laminaria* belt, *c*. 0.6 m ACD (MLWS), 29.3.83.

Family **LYSIANASSIDAE**

Lysianassa ceratina (Walker, 1889) [Lincoln, 1979: 102]

Kemp Town: single females on four occasions with various samples collected from concrete/embedded flint blocks (dismantled railway) situated astride the *Mytilus/Palmaria-Laminaria* transition: with a scraping of *Halichondria panicea, Sertularella gaudichaudi* and several small *Molgula cf. socialis* from a landward-facing (north) vertical, *c*. 1.0 m ACD, 2.8.81; in a hollow under a stone, accompanied by *Idotea granulosa* (one male), *c*. 1.1 m ACD, 18.8.81; amongst *Sertularia argentea* suspended from the underside of an overhang, *c*. 0.9 m ACD, 29.12.82; and with a scraping of *Dynamena pumila, Sertularella gaudichaudi* and *Molgula cf. socialis* from a landward-facing vertical, *c*. 0.9 m ACD, 31.7.84.

Family **OEDICEROTIDAE**

Pontocrates altamarinus (Spence Bate & Westwood, 1862) [Lincoln, 1979: 342]

Kemp Town: a single ovigerous female collected with *Ceramium* sp. from a pool with a partially sand-covered floor, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 18.8.81.

Family **STENOTHOIDAE**

Stenothoe monoculoides (Montagu, 1813) [Lincoln, 1979: 196]

Roedean: four records of single individuals: an ovigerous female amongst *Ceramium* sp. (supporting *Orthopyxis integra*), *Laminaria* belt, *c*. 0.6 m ACD, 21.7.82; an immature amongst *Sertularia argentea, Laminaria* belt, *c*. 0.5 m ACD, 14.4.84; an ovigerous female with a mixed sample of *Dynamena pumila* and *Kirchenpaueria pinnata*, Rhodophyta belt, *c*. 1.1 m ACD, 31.5.84; an immature amongst *D. pumila*, Rhodophyta belt, *c*. 1.1 m ACD, 12.1.85.

Suborder COLOMASTIGIDEA

Family **COLOMASTIGIDAE**

Colomastix pusilla Grube, 1861 [Lincoln, 1979: 144]

Roedean: a single female with *Halichondria panicea*, Rhodophyta belt, *c*. 0.8 m ACD, 1.8.81; one female with *H. panicea*, Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 7.10.83; another female accompanied by five *Tritaeta gibbosa* females (q.v.) with *Hymeniacidon perlevis*, Rhodophyta belt, *c*. 0.9 m ACD, 1.5.84; two females and one male with *H. panicea*, Rhodophyta belt, *c*. 1.1 m ACD, 12.1.85.

Kemp Town: one female accompanied by one *Tritaeta gibbosa* female with *Suberites domuncula*, *Laminaria* belt, *c*. 0.6 m ACD (MLWS), 29.3.83.

Suborder SENTICAUDATA

Infraorder COROPHIIDA

Family **AMPITHOIDAE**

Pleonexes helleri (Karaman, 1975) [Lincoln, 1979: 464 as *Ampithoe (Pleonexes) neglecta*]

Roedean: undetected 1981, sporadic 1982-early 1983, common subsequently. Found mainly amongst algae (Ectocarpales indet., *Cladophora rupestris, Corallina officinalis, Ceramium* sp., *Polysiphonia fucoides*) and rarely in other habitats (*Dynamena pumila, Sertularia argentea*, scraping of *Polydora ciliata* mud chimneys from a rock vertical, depression in bedrock surface) variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.3-0.5 m ACD: 24.4.82; 21.7.82; 22.9.82; 4.10.82; 3.2.83; 26.5.83-18.1.85. Number per sample of alga, usually 1-4; higher numbers, 5-34, August 1983-January 1984 and August-November 1984, the larger collections dominated by immatures. In other habitat samples, 1-a few.

Kemp Town: rare. Three records of immatures amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.): one, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 19.11.83; four, *c.* 1.0 m ACD, 11.9.84; one, *Laminaria* belt, *c*. 0.8 m ACD, 24.10.84.

Ovingdean: an immature amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.0 m ACD, 3.11.83.

Breeding: ovigerous females recorded March, May-September, November; females with hatched young, September-October.

Family **AORIDAE**

Aora typica Krøyer, 1845 [Lincoln, 1979: 472]

Roedean: not uncommon in the summer. Found amongst algae (Ectocarpales indet., *Cladophora sericea, Corallina officinalis, Ceramium* sp., *Polysiphonia fucoides*) and rarely recorded tufted bryozoans (*Amathia citrina* and *Bugulina turbinata*) variously distributed in, and at levels below, the *F. serratus*-Rhodophyta transition, *c*. 1.3-0.6 m ACD: 2.7.81; 1.8.81; 17.8.81; 29.8.81; 6.8.82; 9.8.83; 24.8.83; 30.7.84; 12.8.84; 28.8.84; 10.9.84; 26.9.84. Number per sample of alga, 1-32, maximal August, and amongst tufted bryozoans, 1-4.

Kemp Town: a brief appearance each summer amongst algae (Ectocarpales indet., *Ceramium* sp., *Polysiphonia fucoides*) variously distributed in the *Mytilus/Palmaria-Laminaria* transition and *Laminaria* belt, *c*. 1.0-0.7 m ACD: 2.8.81; 18.8.81; 22.7.82; 10.8.83; 13.8.84; 29.8.84. Number per sample, 1-9.

Breeding: ovigerous females recorded July-August.

Family **CAPRELLIDAE** Skeleton shrimps

Caprella acanthifera Leach, 1814 [Harrison, 1944: 13]

Roedean: a common species found amongst algae (Ectocarpales indet. (a few juveniles only), *Cladophora rupestris, Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides, Rhodomela confervoides*), hydroids (*Dynamena pumila, Sertularella gaudichaudi, Sertularia argentea, Kirchenpaueria pinnata*) and rarely recorded tufted bryozoans (*Amathia citrina* and *Bugulina turbinata*) variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.3-0.5 m ACD, rarely above the *F. serratus*-Rhodophyta transition, c. 1.3 m ACD (ALTL): 9.3.81; 1.8.81-24.11.81; 25.3.82-13.12.82; 3.2.83; 27.2.83; 28.3.83; 11.6.83-30.12.83; 15.2.84-6.12.84; 8.2.85. Number per sample of alga, 1-18 or more, and in other samples, similar numbers; maximal in summer.

Kemp Town: not uncommon amongst algae (Ectocarpales indet. (a few juveniles only) epiphytic on *Laminaria saccharina* fronds), *Ceramium* sp., *Polysiphonia fucoides, P. nigra*) and hydroids (*Dynamena pumila, Sertularella gaudichaudi, Sertularia argentea*) variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD: 20.7.81; 2.8.81; 18.8.81; 10.3.82; 24.5.82-29.12.82; 12.6.83-25.8.83; 2.5.84; 31.7.84-27.9.84. Number per sample of alga and of hydroid, 1-10 or more; maximal in summer.

Ovingdean: a few juveniles with two *Caprella fretensis* immature females amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 28.9.84.

Breeding: ovigerous females recorded April-October, especially July-August; females with hatched young in August.

Caprella fretensis Stebbing 1878 [Harrison, 1944: 22]

Roedean: recorded eight times (five times amongst *Sertularia argentea*) variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.9-0.5 m ACD: one male amongst *Corallina officinalis*

(supporting epiphytic *Ceramium* sp.), *c*. 1.9 m ACD (MLWN), 11.1.82; one immature female amongst *S. argentea*, *c*. 1.3 m ACD, 3.2.83; one female carrying three hatchlings, amongst *S. argentea*, *c*. 0.7 m ACD, 27.2.83; one ovigerous female amongst *S. argentea*, *c*. 1.0 m ACD, 15.2.84; one male amongst drift *Obelia longissima*, *c*. 0.7 m ACD, 16.4.84; four immature females amongst *S. argentea*, *c*. 0.5 m ACD, 26.9.84; one juvenile amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), and one immature female and a juvenile amongst *S. argentea*, *c*. 1.3 m ACD, 23.10.84.

Ovingdean: two immature females with several *Caprella acanthifera* juveniles amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 28.9.84.

Breeding: a single female with hatched young, 27.2.83, and an ovigerous female, 15.2.84 (details above).

Caprella tuberculata Guérin, 1836 [Harrison, 1944: 23]

Roedean: sporadic 1981-1983, more frequent 1984. Found predominantly amongst hydroids (*Harlaubella gelatinosa*, *Dynamena pumila, Sertularella gaudichaudi, Sertularia argentea, Kirchenpaueria pinnata*) and rarely in other habitats (*Ceramium* sp. (supporting the hydroid *Orthopyxis integra*), *Amathia citrina, Bugulina turbinata*) variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.1-0.5 m ACD, only twice above the *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD: 19.7.81; 14.10.81; 24.4.82; 21.7.82; 20.8.82; 3.2.83; 27.2.83; 15.2.84; 14.4.84; 31.5.84; 28.8.84; 10.9.84; 26.9.84; 7.11.84. Number per sample, 1-5, mostly single specimens, and on two occasions, *c.* 10 (amongst *Ceramium* sp. (supporting *Orthopyxis integra*), *c*. 0.6 m ACD, 21.7.82, and with a mixed sample of *Sertularella gaudichaudi* and *Sertularia argentea*, *c*. 0.5 m ACD, 26.9.84).

Kemp Town: not uncommon amongst hydroids (*Hartlaubella gelatinosa, Obelia longissima, Dynamena pumila, Sertularella gaudichaudi, Sertularia argentea, Kichenpaueria pinnata*) sampled from vertical and downward-facing surfaces (overhangs) of concrete/embedded flint blocks (dismantled railway) situated astride the *Mytilus/Palmaria-Laminaria* transition, *c.* 1.1-0.7 m ACD: 3.7.81; 16.9.81; 10.3.82; 24.5.82-22.7.82; 5.9.82; 19.9.82; 29.12.82; 17.2.83; 17.3.83; 14.5.83; 18.1.84-3.3.84; 15.5.84; 31.7.84-24.10.84; 9.2.85. Number per sample, 1-10 or more. A single ovigerous female amongst Ectocarpales indet. epiphytic on a *Laminaria saccharina* frond, *c*. 0.8 m ACD, 29.8.84.

Breeding: ovigerous females recorded February-September, December; females with hatched young February, August.

Family **COROPHIIDAE**

Apocorophium acutum (Chevreux, 1908) [Chevreux & Fage, 1925: 366 as *Corophium acutum*]

Note. Differed from Lincoln's description (1979: 534, fig.256 as *Corophium*) in the urosome having a less rounded shape in dorsal view and the adult female antenna two peduncle article 3 inner ventral distal margin with a pair of spines closely set together (rather than one) and peduncle article 4 inner ventral margin with three spines (rather than four).

Roedean: found on six occasions: one ovigerous female amongst *Ceramium* sp. (supporting *Orthopyxis integra*), *Laminaria* belt, *c*. 0.6 m ACD (MLWS), 21.7.82; one male with a mixed sample of *Halichondria panicea* and *Dynamena pumila*, Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 7.10.83; one female amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.) in a pool, *F. serratus* belt, *c*. 2.0 m ACD, 17.12.83; one ovigerous female and a male amongst *Amathia citrina*, Rhodophyta belt, *c*. 1.0 m ACD, 26.9.84; one juvenile amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 0.9 m ACD, 23.10.84; another juvenile with a mixed sample of *Dynamena pumila* and *Kirchenpaueria pinnata*, *F. serratus* belt, *c*. 1.8 m ACD, 20.11.84.

Kemp Town: one small female amongst *D. pumila* on a concrete block, *Mytilus/Palmaria* belt, *c*. 1.2 m ACD, 19.10.82.

Monocorophium insidiosum (Crawford, 1937) [Crawford, 1937: 615 as *Corophium*; Lincoln, 1979: 530 as *Corophium*]

Roedean: undetected 1981-82, occasional records subsequently. Found with samples usually retaining significant amounts of fine inorganic detrital sediment (Ectocarpales indet., *Ceramium* sp., *Polysiphonia fucoides, Laomedea flexuosa, Dynamena pumila, Sertularia argentea*, barnacles) variously collected from the *F. vesiculosus, F. serratus* and Rhodophyta belts, *c*. 3.0-0.9 m ACD: 28.3.83; 10.7.83; 23.9.83; 17.12.83; 17.1.84; 14.4.84; 31.5.84; 29.6.84; 10.10.84; 12.1.85. Single specimens per sample save once when two small females, seven ovigerous females, a female carrying a single hatchling, and three males were found amongst a scraping of small algal growths (including *Ceramium* sp.) and barnacles from a groyne, *c*. 1.1 m ACD, 10.10.84.

Juveniles, probably *M. insidiosum*, amongst usually sediment-laden samples (Ectocarpales indet., *Gelidium pusillum, Laomedea flexuosa, Dynamena pumila*, barnacles, *Amathia citrina*) variously collected from the *F. vesiculosus, F. serratus* and Rhodophyta belts, *c*. 3.0-0.8 m ACD: 25.7.83; 8.9.83; 18.11.83; 17.12.83; 12.8.84; 26.9.84; 10.10.84; 6.12.84. Single specimens per sample.

Breeding: brooding females recorded May and October.

Family **ISCHYROCERIDAE**

Jassa falcata (Montagu, 1808) [Lincoln, 1979: 550] (*Jassa marmorata* undetected)

Roedean: a very common species occurring throughout the period of investigation March 1981-February 1985 with particularly thriving colonies recorded March-October.

Found amongst/on algae (Ectocarpales indet., *Dictyota dichotoma, Taonia atomaria, Laminaria saccharina* (on fronds), *Cladophora rupestris, C. sericea, Bryopsis* sp., *Corallina officinalis, Mastocarpus stellatus, Chondrus crispus, Plocamium cartilagineum, Ceramium* sp., *Halurus flosculosus, Cryptopleura ramosa, Polysiphonia fucoides, Rhodomela confervoides*), hydroids (*Hartlaubella gelatinosa, Laomedea flexuosa, Dynamena pumila, Sertularella gaudichaudi, Sertularia argentea, Kirchenpaueria pinnata*) and more intermittently searched habitats (the sponge *Hymeniacidon perlevis* and the rarely recorded tufted bryozoan *Amathia citrina*), variously distributed in the *F. vesiculosus* (rare), *F. serratus* (occasional becoming common in the *F. serratus*-Rhodophyta transition), Rhodophyta (common) and *Laminaria* (common) belts, *c*. 2.6-0.5 m ACD.

Especially high-density populations were recorded on *Sertularia argentea* attached to vertical and downward-facing surfaces (overhangs) of a fallen-into-disrepair concrete groyne, *c*. 0.7-0.5 m ACD: 14.10.81; 25.3.82; 16.3.84; 26.9.84.

Kemp Town: common throughout the period of investigation June 1981-February 1985 (recording initiated later than at Roedean).

Moderate-sized colonies occurred in all seasons on hydroids (*Hartlaubella gelatinosa, Obelia longissima, Dynamena pumila, Sertularella gaudichaudi, Sertularia argentea* (especially), *Kirchenpaueria pinnata*) occupying mainly the vertical and downward-facing surfaces (overhangs) of concrete/embedded flint blocks (dismantled railway) situated astride the *Mytilus/Palmaria-Laminaria* transition, *c*. 1.1-0.7 m ACD.

Less numerous amongst algae: found regularly as single individuals, occasionally up to five or a few more, amongst *Polysiphonia fucoides* and its common epiphyte *Ceramium* sp., variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD; one record of a well developed colony on *P. fucoides* (supporting epiphytic *Plocamium cartilagineum*), *Laminaria* belt, *c*. 0.6 m ACD (MLWS), 15.10.81; twice recorded in small numbers in other phytal habitats: *Ceramium* sp. epiphytic on *Chondrus crispus*, *c*. 1.1 m ACD, 9.1.82; Ectocarpales indet. epiphytic on a *Laminaria saccharina* frond, *c*. 1.0 m ACD, 13.8.84. A single small specimen amongst barnacles on an east-facing groyne vertical, *c*. 1.2 m ACD, 8.10.84.

Ovingdean: several small specimens amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.0 m ACD, 3.11.83.

Breeding: ovigerous females recorded January-December.

Infraorder GAMMARIDA

Family **GAMMARELLIDAE**

Gammarellus angulosus (Rathke, 1843) [Lincoln, 1979: 420]

Roedean: small specimens, *c*. 5 mm long, found twice: three amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.0 m ACD, 8.4.82; one amongst *Sertularia argentea*, *Laminaria* belt, *c.* 0.5 m ACD, 16.3.84.

Family **GAMMARIDAE**

Echinogammarus obtusatus (Dahl, 1938) [Lincoln, 1979: 272 as *Eulimnogammarus*]

Roedean: common, mainly in the autumn and winter, under flint and chalk cobbles overlying gravelly sand in channels and depressions variously distributed in the *F. vesiculosus* and upper *F. serratus* belts, *c*. 2.8-1.9 m ACD (MLWN), especially the higher levels (presence of mating aggregations indicated 'm. aggr.'; only single and/or small groups of unpaired individuals found at other times): 24.11.81; 30.12.81 (m. aggr.); 11.1.82; 24.1.82 (m. aggr.); 9.3.82; 8.4.82; 24.4.82 (m. aggr.); 31.10.82; 5.11.82; 12.1.83 (m. aggr.); 18.1.83; 11.2.83 (m. aggr.); 27.2.83; 14.4.83 (m. aggr.); 17.1.84 (m. aggr.); 2.3.84 (m.aggr.); 16.3.84; 6.12.84; 19.12.84 (m. aggr.).

Breeding: mating aggregations recorded December-April (dates above); ovigerous females December-February, April; females with hatched young December, February-April.

Echinogammarus incertae sedis planicrurus Reid, 1940 [Lincoln, 1979: 274 as *Pectenogammarus planicrurus*]

Kemp Town: four records: two males, 20.7.81, and one male, 7.7.82, with collections of *Gammarus crinicornis* (q.v.) from amongst algal debris and pebbles, lower boundary of the shingle beach and vicinity, *c*. 1.3-1.2 m ACD; one male under a flint cobble, *c*. 1.2 m ACD, 28.2.83; one female, dead, with a single egg in her brood pouch, collected from the swash-line on a narrow strip of sand interposed between the lower boundary of the shingle beach and the *Mytilus*-covered rocks to seaward, *c*. 1.3 m ACD, 2.6.84.

Gammarus crinicornis Stock, 1966 [Lincoln, 1979: 262]

Note. According to Lincoln the record given as '*Gammarus* sp. allied to *locusta*' in the Plymouth Marine Fauna (Marine Biological Association, 1957: 220) was probably *crinicornis* Stock: it was found at Whitsand Bay and Portwrinkle and represented the limit of the known distribution of this warm-

temperate species on the British coast. More recently, however, post-dating the records given here, Tittley *et al*. (1986) collected *G. crinicornis* at four chalk platform sites during a survey of East Sussex and Kent shores: Newhaven (19.6.86); Birling Gap (20.6.86); St. Margaret's Bay to South Foreland and Hope Point (25.6.86).

Roedean: found quite frequently amongst/on algae (Ectocarpales indet., *Laminaria saccharina* frond, *Ceramium* sp., *Polysiphonia fucoides*) and under stones, variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.9-0.5 m ACD: 30.4.81; 18.5.81; 1.8.81; 29.8.81; 25.2.82; 6.5.82; 23.5.82; 28.3.83; 26.4.83; 11.6.83; 25.6.83; 25.7.83; 12.8.84. Number per sample of alga, 1-4, and on one occasion 9 aggregated in a concavity on a *Laminaria saccharina* frond, *c*. 0.7 m ACD, 1.8.81; number under individual stones, 1-4.

Kemp Town: large numbers, attracting flocks of Black-headed Gulls (*Larus ridibundus*), amongst algal debris (including *Laminaria saccharina, Ulva lactuca, Palmaria palmata, Chondrus crispus*) deposited along the lower boundary of the shingle beach and vicinity, and amongst the beach pebbles, *c*. 1.3-1.2 m ACD: 20.7.81; 7.7.82; 25.8.83.

Small numbers found on five occasions: 1-4 per sample of *Polysiphonia fucoides*, variously collected from the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.7 m ACD, 3.6.81, 20.7.81 (with two *Gammarus locusta*) and 2.8.81; 10 (with 43 *G. locusta*) in a detached *Buccinum undatum* egg cluster stranded at *c*. 1.1 m ACD, 10.12.81; a single male in a sandy pool, *c*. 1.0 m ACD, 22.7.82.

Breeding: ovigerous females recorded May-August, December; females with hatched young March, August.

Gammarus locusta (Linnaeus, 1758) [Lincoln, 1979: 258]

Roedean: found very occasionally amongst/on algae (Ectocarpales indet., *Laminaria saccharina* frond, *Corallina officinalis*) and under stones, variously distributed in the *F. vesiculosus*, Rhodophyta and *Laminaria* belts, *c*. 2.9-0.6 m ACD: 17.8.81; 30.12.81; 15.10.82; 15.3.83; 9.8.83; 7.11.84. Number per sample of alga and under individual stones, 1-2.

Kemp Town: a few records, large numbers as well as small, *c*. 1.3-0.6 m ACD, mainly 1981: one male and a female carrying hatchlings (with a single *Gammarus crinicornis* ovigerous female), amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 20.7.81; a single female carrying hatchlings collected from the same habitat and shore level, 16.9.81; locally numerous under stones, *Laminaria* belt, *c*. 0.7-0.6 m ACD, 15.10.81; 43 (with 10 *G. crinicornis*) in a detached *Buccinum undatum* egg cluster stranded at *c*. 1.1 m ACD, 10.12.81; 'apparently' abundant (*G. crinicornis* may also have been present, even as the dominant species, but overlooked due to inadequate sampling), attracting flocks of Black-headed Gulls (*Larus ridibundus*), amongst algal debris (including *Laminaria saccharina, Ulva lactuca, Palmaria palmata, Polysiphonia* sp.) deposited along the lower boundary of the shingle beach and vicinity, *c*. 1.3-1.2 m ACD, 7.8.82.

Breeding: ovigerous females recorded October, December; females with hatched young March, July, September, November.

Gammarus spp. (*G. crinicornis* and/or *G. locusta*)

Juveniles unidentified to species level:

Roedean: amongst algae (Ectocarpales indet., *Corallina officinalis, Ceramium* sp., *Polysiphonia fucoides*) variously distributed in the *F. serratus* and Rhodophyta belts, *c*. 1.9-1.1 m ACD: 5.4.81;

11.1.82; 25.6.83; 25.7.83; 1.5.84; 29.6.84; 18.1.85. Number per sample, 1-3, and on one occasion 9 amongst Ectocarpales indet. in a pool, *F. serratus* belt, *c*. 1.9 m ACD (MLWN), 25.6.83. Small numbers under stones, *c*. 1.3 m ACD, 14.5.84.

Kemp Town: amongst Ectocarpales indet. epiphytic on *Palmaria palmata, Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 25.8.83 (two); amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 1.0 m ACD, 13.6.84 (one); amongst Ectocarpales indet. epiphytic on *Laminaria saccharina*, *c*. 1.0 m ACD, 13.8.84 (one) and *c*. 0.8 m ACD, 29.8.84 (one).

Infraorder HADZIIDA

Family **CALLIOPIIDAE**

Apherusa bispinosa (Spence Bate, 1857) [Lincoln, 1979: 410]

Roedean: found frequently, mainly in the summer, amongst/on algae (Ectocarpales indet., *Laminaria saccharina* frond, *Cladophora* sp., *Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides*) variously distributed in the Rhodophyta and *Laminaria* belts, *c*. 1.2-0.6 m ACD: 1.8.81; 15.9.81; 6.7.82; 21.7.82; 4.9.82; 15.10.82; 25.6.83-24.8.83; 18.11.83; 31.5.84-20.11.84. Number per sample, usually 1-2; occasionally higher numbers, 5-20 or more, July-September, especially 1984, the larger collections generally dominated by immatures.

Kemp Town: rare. Single specimens amongst algae on four occasions only: *Ceramium* sp., *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 18.8.81; *Ceramium* sp. (epiphytic on *Chondrus crispus*), *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 30.8.81; *Polysiphonia nigra*, *c*. 1.1 m ACD, 12.6.83; *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 1.1 m ACD, 13.8.84.

Ovingdean: found twice amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.): a single specimen, Rhodophyta belt, *c.* 1.0 m ACD, 3.11.83; two immatures, Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 28.9.84.

Breeding: ovigerous females recorded June-September; a single female with hatched young, 15.10.82 (Roedean).

Apherusa jurinei (Milne Edwards, 1830) [Lincoln, 1979: 414]

Roedean: a commonly occurring species found mainly amongst algae (Ectocarpales indet., *Cladostephus spongiosus, Cladophora rupestris, Corallina officinalis, Cystoclonium purpureum, Ceramium* sp., *Halurus flosculosus, Cryptopleura ramosa, Polysiphonia fucoides, Rhodomela confervoides*) and rarely in other habitats (under recumbent *F. vesiculosus* frond, amongst *Sertularia argentea*, under stones) variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.6 m ACD, chiefly below *c*. 1.3 m ACD (ALTL): 5.4.81; 1.8.81; 17.8.81; 29.8.81; 14.10.81; 11.11.81; 11.1.82-29.11.82; 12.1.83; 27.2.83; 14.4.83; 11.6.83-20.11.84; 12.1.85; 8.2.85.

Number per sample of alga, usually 1-3, and in other habitats, 1-2, with higher numbers occurring amongst algae in the summer, viz. 6-25 or more amongst samples of *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), 22.6.82, 21.7.82, 6.8.82, 20.8.82, 24.8.83; seven amongst *Corallina officinalis* (supporting epiphytic *Ceramium* sp.), 12.8.84.

Kemp Town: rare. Found amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), one exception indicated, variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.6 m ACD: 19.6.81;

2.8.81; 30.8.81 (*Ceramium* sp. epiphytic on *Chondrus crispus*); 25.4.82; 23.6.82; 22.7.82; 13.8.84. Number per sample, 1-3.

Ovingdean: found twice amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.): a single specimen, Rhodophyta belt, *c*. 1.0 m ACD, 3.11.83; three specimens, Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 28.9.84.

Breeding: ovigerous females recorded January, March, April, June-August, October, November, with highest numbers in August; females with hatched young March, August.

Calliopius laeviusculus (Krøyer, 1838) [Lincoln, 1979: 406]

Roedean: found sparingly amongst/on algae (Ectocarpales indet., *Laminaria saccharina* (abraded frond supporting *Kirchenpaueria pinnata* remnants and a *Jassa falcata* colony), *Ulva* sp., *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.)) and rarely under stones, variously distributed in the *F. serratus* and Rhodophyta belts and the Rhodophyta-*Laminaria* transition, *c*. 1.9-0.7 m ACD: 30.4.81; 2.6.81; 2.7.81; 1.8.81; 6.5.82; 6.7.82; 21.7.82; 25.7.83; 29.6.84; 23.10.84. Number per sample of alga, 1-4, and under stones, 1-3.

Probably this species, observed here and there in small numbers (five of which were sampled and identity confirmed) in weedy pools dominated by *Ulva* sp. near low water of the day, *c*. 1.1 m ACD, 6.7.82, and observed as occasional specimens (one collected and confirmed) in similar pools, *c*. 1.9-1.6 m ACD, 29.6.84.

Breeding: ovigerous females recorded in June; a single female with hatched young, 29.6.84.

Family **MAERIDAE**

Maera grossimana (Montagu, 1808) [Lincoln, 1979: 282]

Roedean: five records under stones: one ovigerous female, Rhodophyta belt, *c*. 1.0 m ACD, 1.8.81; one immature, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, 6.8.82; one ovigerous female with an immature, Rhodophyta belt, *c*. 1.2 m ACD, 8.9.83; one male, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, 3.11.83; another male, *F.* serratus belt, *c*. 1.4 m ACD, 19.12.84.

Kemp Town: found twice under stones: single immature specimens, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 5.10.82 and 30.11.82.

Family **MELITIDAE**

Melita hergensis Reid, 1939 [Lincoln, 1979: 296]

Roedean: a single male, 7 mm long, with three *Gammarus* sp. juveniles, under a stone overlying sand, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 14.5.84.

Infraorder TALITRIDA

Family **HYALIDAE**

Apohyale prevostii (Milne Edwards, 1830) [Lincoln, 1979: 232 as *Hyale nilssoni* (Rathke)]

Roedean: found sparingly amongst barnacles (sampled mainly from groynes), *c*. 4.1-2.2 m ACD: 25.6.83; 25.7.83; 23.9.83-18.11.83; 17.1.84; 31.1.84; 1.4.84; 26.9.84; 6.12.84; 4.1.85; 18.1.85. Probably overlooked 1981-1982. Number per sample of *c*. 20-30 adult barnacles, 1-4, mostly single specimens.

Single specimens on six occasions in other habitats, *c*. 5.5-1.3 m ACD (MHWN = 5.1): amongst tube-dwelling diatoms, *F. vesiculosus* belt, *c*. 2.8 m ACD, 25.2.82; crawling across aerially-exposed bedrock, *F. vesiculosus*-*F. serratus* transition, *c*. 2.3 m ACD, 9.3.82; associated with small *F. spiralis* on a groyne, *c*. 5.5 m ACD, 10.7.83; amongst *Polysiphonia fucoides*, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 17.1.84; amongst Ectocarpales indet. in a pool, *F. serratus* belt, *c*. 2.0 m ACD, 12.6.84; under a recumbent *F. vesiculosus* frond, *c*. 2.6 m ACD, 4.1.85.

Kemp Town: found amongst barnacles encrusting steel piling (west face of marina west breakwater root) and concrete/embedded flint surfaces (groyne *c*. 100 m west of breakwater root), *c*. 5.4-3.1 m ACD: 24.5.82; 1.11.82; 13.1.83-27.4.83; 26.6.83; 25.8.83; 23.10.83; 17.4.84; 14.7.84; 8.10.84; 11.1.85; 24.1.85. Probably overlooked 1981. Number per sample of *c*. 20-30 adult barnacles, 1-5, maximal winter-spring.

Five records (single specimens, one exception indicated) in phytal habitats: amongst *Ceramium* sp. attached to *Mytilus edulis* on a concrete ledge adjoining the marina west breakwater root, *c*. 3.3 m ACD: 9.4.82; 7.6.82; 13.1.83 (two specimens), and with scrapings of *Blidingia minima*/small *Porphyra umbilicalis*, from the groyne noted above, *c*. 5.3 m ACD: 14.7.84; 8.10.84.

Breeding: ovigerous females recorded January, March, July-November; females with hatched young, January, April.

Family **TALITRIDAE**

Orchestia gammarellus (Pallas, 1766) [Lincoln, 1979: 216]

Roedean: populations revealed by occasional sampling 1981-84 to consist of the two species *O. gammarellus* and *O. mediterranea* together were common amongst decaying algae on shingle and the smaller intervening areas of sand, gravel and/or cobble, *c*. HW (the beach material overlying the chalk platform down to *c*. 3.3 m above CD): each year moderate numbers were apparent by the latter half of May, they were especially abundant June-August, and large numbers were maintained through to November; by December they were usually less obvious, and only scattered observations were made January-April; they were noted as frequent during a mild spell, 11.2.84.

Specimens in company with *O. mediterranea* were frequent under stones and recumbent fronds of attached *F. vesiculosus* on the chalk platform a few metres seaward of the lower boundary of the beach, *c*. 3.2-3.0 m ACD, 20.11.82, and common on the east faces of two groynes *c*. HW, 10.9.84. On both occasions they were probably displaced from their normal habitat by rough seas and beach disturbance.

Kemp Town: populations, possibly including both species of *Orchestia*, were common amongst HW algal debris on the shingle beach, with seasonal variation in abundance paralleling Roedean. Only two samples were collected, neither of which included *O. mediterranea*: 18.8.81; 5.10.82.

Breeding: insufficient data were gathered: ovigerous females collected 5.10.82 and 10.9.84.

Orchestia mediterranea Costa, 1853 [Lincoln, 1979: 218]

Roedean: large numbers 1981-84 in company with *O. gammarellus* (q.v.) amongst HW algal debris on the beach. Maximal through summer.

Recorded on seven occasions in other situations, variously distributed *c*. 9.0-1.3 m ACD: a few small specimens in a crevice in a groyne, *c*. 5.4 m ACD, 30.4.81; frequent in company with *O. gammarellus* under stones and recumbent fronds of attached *F. vesiculosus* on the chalk platform a few metres seaward of the lower boundary of the beach, *c*. 3.2-3.0 m ACD, during a period of gales and beach disturbance, 20.11.82; a single female under a stone overlying sand, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, the lowest recorded level and probably the result of downshore displacement by recent storms, 3.2.83; two females in company with *Echinogammarus obtusatus* (q.v.) under a stone on gravelly sand in a runnel, *F. vesiculosus* belt, *c*. 2.8 m ACD, 27.2.83; one female under a stone, *F. vesiculosus* belt, *c*. 2.7 m ACD, 15.3.83; several specimens amongst algal debris recently swept by heavy seas from around the HW mark on the beach to the higher level on top of the sea-wall, *c*. 9.0 m ACD, 26.11.83; one male on the east face of a groyne, *c*. 4.5 m ACD, 26.11.83; common in company with *O. gammarellus* on the east faces of two groynes *c*. HW during a period of turbulence with severe beach disturbance, 10.9.84.

Kemp Town: no records, see *O. gammarellus*.

Ovingdean: common amongst shingle and decaying algae *c*. HW, and frequent on sand at and near the foot of the banked-up shingle beach *c*. MTL, 25.5.85.

Breeding: inadequate data collected: ovigerous females recorded 17.8.81, 24.5.84, 10.9.84; one female with hatched young, 20.6.83.

Orchestia spp. (*O. gammarellus* and/or *O. mediterranea*)

Roedean: juveniles unidentified to species level: common amongst *Blidingia minima* on a groyne, *c*. 5.5-5.3 m ACD, 8.8.81, 29.8.81; single specimens amongst *Corallina officinalis*, *F. serratus* belt, *c*. 1.6 m ACD, 30.12.81, and *Gelidium pusillum*, *F. serratus* belt, *c*.1.9 m ACD (MLWN), 11.1.82, apparently displaced from higher shore levels by storms. From time to time, especially in the autumn, *Orchestia* spp. were swept by heavy seas from around the HW mark on the beach to the higher level on top of the sea-wall, *c*. 9.0 m ACD, particularly large numbers, mainly dead immatures, being noted 22.9.82.

Superorder EUCARIDA

Order DECAPODA

Suborder PLEOCYEMATA

Infraorder CARIDEA

Family **PALAEMONIDAE**

Palaemon elegans Rathke, 1837 [Smaldon, 1979: 34]

Roedean: regular monitoring 1983-84 showed seasonal variation in abundance as follows: 1983 - quite frequent January, occasional February, rare March, occasional April, frequent mid-May, common late May-October, quite frequent November, occasional December; 1984 - rare January, no records February-March, occasional April, frequent mid-May, common late May-September, frequent October, quite frequent November, occasional December. Occurred in pools in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.2-0.5 m ACD, especially the *F. vesiculosus* and upper *F. serratus* belts, *c*. 2.6-1.9 m ACD.

Kemp Town: only one record during the regular monitoring period 1983-84, viz. occasional specimens in pools in the *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 27.9.84.

Breeding: ovigerous females recorded 10.7.83 and 25.7.83.

Palaemon serratus (Pennant, 1777) [Smaldon, 1979: 38] Common prawn

Roedean: regular monitoring 1983-84 showed seasonal variation in abundance closely paralleling *P. elegans*: 1983 - no records January, a single specimen February, no records March, rare April, frequent mid-May, common late May-October, quite frequent November, occasional December; 1984 - no records January-March, occasional April, quite frequent mid-May, common late May-September, frequent October, quite frequent November, occasional December. Occurred in pools across the shore, *c*. 3.2-0.5 m ACD, as for *P. elegans*.

Kemp Town: regular monitoring 1983-84 revealed a sparing seasonal presence June-October 1983 and mid-May-September 1984. Occurred in pools in the *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD.

Breeding: one ovigerous female recorded 6.7.82.

Family **ALPHEIDAE**

Athanas nitescens (Leach, 1814) [Smaldon, 1979: 45] Hooded shrimp

Roedean: one male under a stone, *Laminaria* belt, *c*. 0.6 m ACD, 28.3.82.

Kemp Town: single males found twice under stones in the *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD: 17.2 83; 17.3.83.

Ovingdean: single specimens found twice under stones: male, Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 16.2.84; female, *Laminaria* belt, *c*. 0.6 m ACD, 28.9.84.

Family **HIPPOLYTIDAE**

Eualus cranchii (Leach, 1817) [Smaldon, 1979: 74 as *Thoralus*]

Roedean: a single female under a stone, *Laminaria* belt, *c*. 0.6 m ACD (MLWS), 28.3.83.

Kemp Town: found twice in pools in the *Laminaria* belt: two females, *c*. 0.5 m ACD, 25.4.82; one male, *c*. 0.8 m ACD, 17.4.84.

Ovingdean: one female taking refuge in an empty *Buccinum undatum* shell in a pool, Rhodophyta belt, *c*. 1.0 m ACD, 3.11.83; one female sampled from several specimens (all apparently *E. cranchii*) in a small water-filled hollow under a stone, *Laminaria* belt, *c*. 0.6 m ACD, 28.9.84.

Eualus occultus (Lebour, 1936) [Smaldon, 1979: 58]

Kemp Town: one female under a stone, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 30.11.82.

Ovingdean: one female under a stone, *Laminaria* belt, *c*. 0.6 m ACD, 28.9.84.

Hippolyte varians Leach, 1814 [Smaldon, 1979: 72] Chameleon prawn

Roedean: not uncommon in the summer. Found in pools in, and at levels below, the *F. serratus*-Rhodophyta transition, *c*. 1.3-0.6 m ACD: 19.7.81; 29.8.81; 15.9.81; 21.7.82; 4.9.82; 18.9.82; 9.8.83; 11.8.83; 30.7.84; 12.8.84; 28.8.84; 26.9.84.

Kemp Town: found sparingly in the summer in pools in the *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD: 3.7.81; 18.8.81; 30.8.81; 22.7.82; 10.8.83; 29.8.84.

Breeding: ovigerous females recorded 18.8 81 and 11.8.83.

Family **CRANGONIDAE**

Crangon crangon (Linnaeus, 1758) [Smaldon, 1979: 102] Common or Brown shrimp

Roedean: monitored 1983-84: small specimens common in the summer. Found in sandy-bottomed pools and channels in the *F. vesiculosus, F. serratus* and Rhodophyta belts, *c*. 2.6-0.8 m ACD, especially below *c*. 1.9 m ACD (MLWN) where such habitats were increasingly more frequent: 25.6.83; 10.7.83; 25.7.83; 12.6.84; 29.6.84; 12.7.84; 30.7.84; 12.8.84. One ovigerous female (dead), half-buried in sand in a dry channel, Rhodophyta belt, *c*. 1.1 m ACD, 14.4.84.

Kemp Town: monitored 1983-84: small specimens variously distributed in shallow pools in sand-surface depressions in the narrow strip of sand adjacent to the lower boundary of the shingle beach, and in sandy-bottomed pools and channels in the Mytilus/Palmaria belt to seaward, *c*. 1.2-1.1 m ACD: 11.7.83; 10.8.83; 13.6.84; 30.6.84; 13.8.84. Small numbers save 30.6.84 when common.

Breeding: one ovigerous female (dead) recorded 14.4.84 (Roedean).

Infraorder ANOMURA

Family **PAGURIDAE**

Pagurus bernhardus (Linnaeus, 1758) [Allen, 1967: 60-61, 93] Common hermit crab

Roedean: monitored 1981-84.

Single juveniles found on three occasions: in a serpulid tube (*Spirobranchus lamarcki*), one of a small detached tangle of old tubes, under a stone in a dry channel, Rhodophyta belt, *c*. 1.0 m ACD, 17.8.81 (carapace length, from tip of rostrum to most posterior extremity of carapace, 2.8 mm); in a scaphopod shell (*Antalis vulgaris*), *F. serratus* belt, *c*. 1.9 m ACD, 25.6.83; in a scaphopod shell (*A. vulgaris*), Rhodophyta belt, *c*. 1.0 m ACD, 30.7.84 (carapace length 3.0 mm).

Small specimens recorded regularly May-November and very rarely December-April, variously distributed in the *F. vesiculosus* (rare), *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.6-0.4 m ACD. No more than a few individuals per occasion save 19.9.81, 4.9.82, 4.10.82, 20.11.82 and 10.9.84 when frequent. Inhabited shells of the following species (number of records per species indicated): *Steromphala cineraria* (44 +); *Littorina fabalis* (four); *L. littorea* (12); *Euspira catena* (one); *E. nitida* (one); *Nucella lapillus* (seven); *Ocenebra erinaceus* (12); *Buccinum undatum* (one); *Tritia incrassata* (seven); *T. reticulata* (125 +); *Bela nebula* (one); a Tertiary fossil probably *Potamides* sp. (three).

An intermediate-sized individual in a *Buccinum undatum* shell, Rhodophyta belt, *c*. 1.2 m ACD, 7.10.83.

Single large specimens found twice in *B. undatum* shells: *F. serratus* belt, *c*. 1.9 m ACD (MLWN), 27.11.81 (recent south-westerly gales); *F. vesiculosus* belt, *c*. 2.6 m ACD, 18.10.83 (recent south-westerly gales and heavy seas).

Kemp Town: monitored 1981-84.

Small specimens recorded regularly March-October, variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c.* 1.1-0.4 m ACD. No more than a few per occasion save 25.4.82, 22.7.82, 5.9.82, 17.4.84 when quite frequent. Inhabited shells of the following species (number of records per species indicated): *Steromphala cineraria* (10); *Nucella lapillus* (26); *Ocenebra erinaceus* (one); *Buccinum undatum* (one); *Tritia incrassata* (one); *T. reticulata* (92 +).

Intermediate individuals recorded on six occasions in the following shells: *Buccinum undatum* (one), *c*. 1.1 m ACD, 20.7.81; *Euspira catena* (three), *c*. 0.7-0.5 m ACD, 25.4.82; *B. undatum* (one), *c*. 1.0 m ACD, 24.5.82; *E. catena* (one), *c*. 1.0 m ACD, 5.9.82; *B. undatum* (three), *c*. 1.0-0.7 m ACD, 17.4.84; *B. undatum* (one), *c*. 0.7 m ACD, 15.5.84.

Large specimens found on eight occasions in *B. undatum* shells variously distributed in the *Mytilus/Palmaria-Laminaria* transition and the *Laminaria* belt, *c*. 1.0-0.5 m ACD (single individuals, one exception indicated): 3.7.81; 15.11.81; 25.4.82 (four); 19.9.82; 27.5.83; 11.7.83; 10.8.83; 15.4.84.

Family **GALATHEIDAE** Squat lobsters

Galathea sqamifera Leach, 1814 [Allen, 1967: 58-59, 94]

Roedean: monitored 1981-84: occurred in all seasons but noted as frequent-common only in March (1982, 1983), August (1981), September (1981, 1982, 1983, 1984), October (1981, 1982, 1983), November (1982), otherwise rare-occasional with no records at all in January and June. Found under stones variously distributed in and at levels below the *F. serratus*-Rhodophyta transition, *c*. 1.3-0.4 m ACD, especially the lower levels exposed by equinoctial tides. One record at a higher shore level, viz. a single specimen under a stone, *F. serratus* belt, *c*. 1.9 m ACD (MLWN), 31.10.82.

Kemp Town: monitored 1981-84: recorded on seven occasions only: 30.8.81 (occasional); 29.9.81 (frequent); 5.9.82 (occasional); 1.11.82 (single specimen); 9.9.83 (frequent); 8.10.83 (single specimen); 17.3.84 (frequent). Found under stones variously distributed in the *Mytilus/Palmaria-Laminaria* transition and the *Laminaria* belt, *c*. 1.0-0.4 m ACD.

Ovingdean: occasional checks at this locality indicated a distribution and abundance similar to that found at Roedean.

Family **PORCELLANIDAE**

Pisidia longicornis (Linnaeus, 1767) [Allen, 1967: 59, 91 as *Porcellana*] Long-clawed porcelain crab

Roedean: monitored 1981-84: common spring-autumn, especially August-October; recorded sparingly in winter though quite frequent 30.12.83 and 15.2.84. Found under stones variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.9-0.4 m ACD, especially in and at levels below the *F. serratus*-Rhodophyta transition *c*. 1.3 m ACD (ALTL). One record at a higher shore level, viz. a single specimen under a stone, *F. vesiculosus* belt, *c*. 2.4 m ACD, 12.1.83.

Kemp Town: monitored 1981-84: common spring-autumn, especially September-October; a sparse presence recorded in winter though common 29.12.82 and fairly frequent 17.3.83 and 17.3.84. Found under stones variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.4 m ACD.

Ovingdean: occasional checks at this locality indicated a distribution and abundance similar to that found at Roedean.

Porcellana platycheles (Pennant, 1777) [Allen, 1967: 59, 91] Broad-clawed porcelain crab

Roedean: recorded rarely 1981-82 (probably under-recorded), occasionally 1983 and frequently 1984. Found under stones variously distributed in the *F. serratus* and Rhodophyta belts, *c*. 2.2-0.8 m ACD: 29.8.81; 28.9.81; 4.9.82; 15.10.82; 28.3.83; 12.5.83; 8.9.83; 7.10.83; 21.10.83; 3.11.83; 31.1.84; 1.4.84; 1.5.84; 17.5.84; 31.5.84; 12.8.84; 10.9.84; 26.9.84; 23.10.84; 7.11.84; 20.11.84; 6.12.84; 19.12.84. Number per occasion, 1-a few, save 10.9.84, 26.9.84 and 20.11.84 when frequent.

Kemp Town: seven records only. Found under stones variously distributed in the *Mytilus/Palmaria* belt and the *Mytilus/Palmaria-Laminaria* transition, *c*. 1.1-1.0 m ACD: 18.8.81; 29.9.81; 15.11.81; 19.9.82; 9.9.83; 24.9.83; 8.10.83. Number per occasion, 1-a few.

Infraorder ASTACIDEA

Family **NEPHROPIDAE**

Homarus gammarus (Linnaeus, 1758) [Allen, 1967: 56, 88] Common lobster, European lobster

Roedean: dead specimens found twice on the strand-line: a partial specimen comprising the abdomen and telson only which measured *c*. 150 mm long, 29.11.82; a complete specimen, save the right cheliped, *c*. 230 mm long (measured from the tip of the rostrum), 24.12.86.

Infraorder BRACHYURA

Family **CANCRIDAE**

Cancer pagurus Linnaeus, 1758 [Ingle, 1980: 107; 1983: 112] Edible crab

Roedean: 1981-84: rather sparing in spring, fairly common in summer and autumn, few records in winter. Found under stones and occasionally in hollows and disused piddock burrows variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.9-0.4 m ACD.

Carapace breadth, 6-95 mm, predominantly 20-60 mm. A dead crab, 13 mm carapace breadth, partially ingested by *Actinia equina*, 25 mm base diameter, under a stone, Rhodophyta belt, *c*. 1.0 m ACD, 27.10.81.

Kemp Town: 1981-84: sparing in spring (except 1982 when frequent), frequent in summer and autumn, few records in winter. Found under stones variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.2-0.4 m ACD.

Size range similar to Roedean with the exception of single larger than usual specimens found twice under concrete overhangs (dismantled railway), *c*. 1.0 m ACD: 2.8.81 (130 mm carapace breadth); 19.9.82 (100 mm carapace breadth).

Ovingdean: occasional checks at this locality indicated a distribution and abundance similar to that found at Roedean.

Family **CORYSTIDAE**

Corystes cassivelaunus (Pennant, 1777) [Ingle, 1980: 87; 1983: 70] Sand crab, Masked crab

Roedean: one male, dead, 28 mm carapace length, deposited on a pocket of stones and gravel, *c*. 1.9 m ACD (MLWN), after a period of south-westerly gales, 17.12.83.

Family **MAJIDAE**

Macropodia rostrata (Linnaeus, 1761) [Ingle, 1980: 132; 183: 144] Long-legged spider crab

Roedean: a single juvenile, 3.5 mm carapace length (measured from tip of rostrum), on *Sertularia argentea* on the downward-facing surface of a concrete overhang (groyne), *c*. 1.3 m ACD (ALTL), 3.2.83.

Maja brachydactyla (Balss, 1922) [Ingle, 1980: 141; 1983: 130 as *M. squinado*; Hayward & Ryland, 2017: 433] Common spider crab

Note. Until recently thought to be conspecific with *Maja squinado* (Herbst) which is endemic to the Mediterranean (Hayward & Ryland 2017).

Roedean: a single individual, *c*. 120 mm carapace breadth, in a pool in the Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 22.6.82.

Dead crabs, *c*. 50-90 mm carapace breadth (single specimens, one exception indicated): *c*. 1.0 m ACD, 22.6.82; strand-line, 26.6.82 (several); strand-line, 25.5.83; strand-line, 2.8.83; *c*. 0.6 m ACD, 9.8.83. Carapaces washed up on the strand-line: 28.11.81 (frequent *c*. 350-560 m west of the regularly monitored area); 26.6.82 (common); 22.12.82 (one); 11.2 83 (one *c*. 500 m west of the monitored area); 2.8.83 (occasional); 12.7.84 (one).

Kemp Town: one specimen, *c*. 100 mm carapace breadth, barely submersed by flood-tide, clinging to rocks adjacent to the storm-damaged terminal section of the groyne *c*. 100 m west of the marina west breakwater root, on its eastern side, *c*. 0.9 m ACD, 19.5.81 (and apparently the same individual under a nearby overhang provided by the groyne, *c*. 0.9 m ACD, 3.6.81 and 19.6.81); one specimen, *c*. 75 mm carapace breadth, nestling in a hollow, *Mytilus/Palmaria-Laminaria* transition, *c.* 1.0 m ACD, 3.6.81; several specimens, up to *c*. 100 mm carapace breadth, under concrete overhangs (dismantled railway), *c*. 1.0 m ACD, 3.7.81; one specimen, *c*. 70 mm carapace breadth, in a hollow, *Laminaria* belt, *c*. 0.7 m ACD, 23.6.82; one specimen, *c*. 80 mm carapace breadth, in a pool, *c*. 0.9 m ACD, 11.7.83.

Dead crabs, *c*. 50-80 mm carapace breadth: *c*. 1.0-1.1 m ACD, 23.6.82 (three); strand-line, 12.6.83 (one); strand-line, 26.7.83 (one); strand-line, 23.6.84 (two); *c*. 0.8 m ACD, 31.7.84 (one). Several carapaces washed up on the strand-line, 9.9.83.

Pisa tetraodon (Pennant, 1777) [Ingle, 1980: 139; 1983: 154] Four-horn spider crab

Note. Carapace lengths include the rostrum.

Roedean: single juveniles found on four occasions amongst red algae: 7 mm carapace length, *Ceramium* sp., Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 15.9.81; 8 mm carapace length, *Corallina officinalis* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.0 m ACD, 22.9.82; 4.5 mm carapace length, *C. officinalis*, Rhodophyta belt, *c*. 1.0 m ACD, 29.11.82; 2 mm carapace length, *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.1 m ACD, 10.10.84. An adult male, 50 mm carapace length, dead on the strand-line, 7.3.86.

Kemp Town: single specimens on three occasions: a female, 25 mm carapace length, under a concrete overhang (dismantled railway), *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 3.7.81; a female, 26 mm carapace length, under a stone, *c*. 1.0 m ACD, 9.9.83; a male, *c*. 47 mm carapace length, clinging

to mussels on the storm-damaged terminal section of the groyne *c*. 100 m west of the marina west breakwater root, *c*. 1.3 m ACD (ALTL), 20.12.84 (two inconspicuous epizoic bryozoan growths noted: a small colony of *Amathia lendigera* on the carapace, and a colony of *Electra pilosa* encrusting the dactylus of the right cheliped).

Ovingdean: one female, 41 mm carapace length, between flint cobbles at low water, *Laminaria* belt, *c*. 0.7 m ACD, 16.2.84.

Family **PORTUNIDAE**

Carcinus maenas (Linnaeus, 1758) [Lebour, 1928: 517 (young stages); Ingle, 1980: 100; 1983: 106] Shore crab, Green crab

Roedean: common. Records 1981-1984 indicated an apparently concerted move onshore late April through May and a more gradual move offshore autumn-winter although higher numbers than usual persisted onshore through the autumn of 1982 and the population appeared in moderate numbers onshore rather earlier than usual in the following spring, viz. mid-April; intertidally minimal in February when no more than a few individuals 15-25 mm carapace width were ever found. Occurred under stones and algae (chiefly *F. serratus*) in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.2-0.4 m ACD, with a preponderance of small individuals, the larger specimens 40-70 mm carapace breadth found chiefly around the low water mark. Three records at higher shore levels: juveniles, *c*. 4 mm carapace breadth, locally common amongst drift algae (including *Laminaria saccharina, F. serratus, F. vesiculosus, Ulva lactuca, Ulva* sp., *Polysiphonia* sp.) freshly deposited on the beach rather above 3.5 m ACD (MTL), 25.7.83 (0500 BST, low water spring occurring *c*. 0530 BST) and 2.8.83 (0630 BST, neap tide ebbing at the lower boundary of the beach *c*. 3.3 m ACD); a single individual, *c.* 15 mm carapace breadth, in the *F. spiralis* belt on a groyne, *c*. 5.1 m ACD (MHWN), 28.8.84 (0530 BST, low water spring occurring *c*. 0600 BST, calm conditions with visibility reduced to 250-300 m by fog).

Megalopae very occasionally found amongst algae (Ectocarpales indet., *Polysiphonia fucoides* supporting epiphytic *Ceramium* sp.), 1-3 per sample, variously collected from the *F. serratus* and Rhodophyta belts, *c*. 1.9-0.9 m ACD: 18.6.81; 2.7.81; 6.6.82; 11.6.83; 25.6.83; 29.6.84. A single megalopa amongst *Kirchenpaueria pinnata*, *c*. 1.3 m ACD, 12.6.84.

Very young crab stages, 1.5-2.8 mm carapace breadth (first young crab stage *c*. 1.6 mm carapace breadth according to Lebour 1928), not infrequently found and in various habitats (Ectocarpales indet, *Corallina officinalis, Halurus flosculosus, Polysiphonia fucoides* (usually supporting epiphytic *Ceramium* sp.), *Kirchenpaueria pinnata*, barnacles), 1-a few per sample, variously collected from the *F. vesiculosus, F. serratus* and Rhodophyta belts and the Rhodophyta-*Laminaria* transition, *c*. 2.6-0.7 m ACD (carapace breadth range per occasion indicated): 2.7.81 (1.5-1.6 mm); 1.8.81 (2.0 mm); 22.6.82 (1.5 mm); 6.7.82 (1.5-2.8 mm); 11.6.83 (1.6 mm); 25.6.83 (1.5-2.5 mm); 9.8.83 (1.5 mm); 29.6.84 (1.5-2.5 mm); 12.7.84 (1.5-2.1 mm); 30.7.84 (2.1 mm).

Kemp Town: 1981-84: rather sparing spring-autumn and only a few individuals, 10-25 mm carapace breadth, found in winter. Vertical range restricted by the shingle beach overlying the chalk platform down to *c*. 1.3 m ACD (ALTL). Occurred under stones and algae (*Laminaria saccharina*, local clumps of *F. serratus, Palmaria palmata*) in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.2-0.4 m ACD, especially in the shelter of concrete/embedded flint blocks (dismantled railway) situated astride the *Mytilus/Palmaria-Laminaria* transition. Four records at higher shore levels: occasional juveniles amongst drift algae (including *Laminaria saccharina, Ulva lactuca, Palmaria palmata, Chondrus crispus, Polysiphonia* sp.) deposited along the lower boundary of the shingle, *c*. 1.3 m ACD, and one juvenile, *c*. 5 mm carapace breadth on barnacles encrusting a groyne, *c*. 2.1 m ACD, 26.7.83 (*c.* 0530 BST, low water spring occurring *c*. 0600 BST); and on the same groyne amongst *Mytilus edulis*, single

juveniles twice, viz. *c*. 10 mm carapace breadth, *c*. 1.9 m ACD, 13.6.84 (0515 BST, low water spring occurring *c*. 0445 BST), and *c*. 5 mm carapace breadth, *c*. 2.6 m ACD, 30.6.84 (0515 BST, low water spring occurring *c*. 0545 BST).

Megalopae very occasionally found amongst algae (Ectocarpales indet., *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *P. nigra*), 1-2 per sample, variously collected from the *Mytilus/Palmaria* belt and the *Mytilus/Palmaria-Laminaria* transition, *c*. 1.1-1.0 m ACD: 19.6.81; 23.6.82; 12.6.83; 26.6.83; 13.6.84; 31.7.84. At a higher shore level, a single megalopa in a scraping of barnacles from steel piling (west face of marina west breakwater root), *c*. 4.4 m ACD, 14.7.84 (fresh south-westerly wind and moderately rough sea).

Very young crab stages, 1.5-2.0 mm carapace breadth (first young crab stage *c*. 1.6 mm carapace breadth according to Lebour 1928), very occasionally found amongst algae (Ectocarpales indet., *Polysiphonia fucoides* supporting epiphytic *Ceramium* sp.), 1-several per sample, variously collected from the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD (carapace breadth range per occasion indicated): 7.6.82 (1.5 mm); 26.6.83 (1.5-2.0 mm); 11.7.83 (1.5-1.8 mm); 10.8.83 (1.5 mm); 31.7.84 (1.5-2.0 mm). One specimen, 1.6 mm carapace breadth, amongst *Molgula cf. socialis*, *c*. 1.1 m ACD, 12.6.83. At a higher shore level, a single first young crab stage only 1.4 mm carapace breadth in a scraping of barnacles from a groyne, *c*. 4.1 m ACD, 14.7.84.

Ovingdean: occasional checks at this locality indicated a distribution and abundance similar to that found at Roedean.

Breeding:

Paired crabs (one pair per occasion with one exception of two indicated): 18.6.81; 2.7.81; 20.7.81; 24.5.82; 23.6.82 (two pairs); 1.11.82; 30.11.82; 11.6.83; 10.8.83; 11.8.83; 31.7.84; 26.9.84; 2.6.85.

Ovigerous females (one per occasion): 20.7.81 (Kemp Town, egg plug orange); 18.1.83 (Roedean, egg plug orange); 11.6.83 (Roedean, egg plug grey); 16.2.84 (Ovingdean, egg plug orange).

Megalopae: 18.6.81; 19.6.81; 2.7.81; 6.6.82; 23.6.82; 11.6.83; 12.6.83; 25.6.83; 26.6.83; 12.6.84; 13.6.84; 29.6.84; 14.7.84; 31.7.84. Details of distribution and abundance given above (Roedean and Kemp Town).

First stage crabs (assumed to be those specimens measuring 1.4-1.6 mm carapace breadth): 2.7.81; 7.6.82; 22.6.82; 6.7.82; 11.6.83; 12.6.83; 25.6.83; 26.6.83; 11.7.83; 9.8.83; 10.8.83; 29.6.84; 12.7.84; 14.7.84; 31.7.84. Detailed records above (Roedean and Kemp Town).

Mortality: quite frequent *C. maenas* found dead on the Roedean strand-line early March 1986 following an exceptionally cold February; insignificant compared to the large numbers of dead *Necora puber*.

Necora puber (Linnaeus, 1767) [Ingle, 1980: 92; 1983: 90 as *Liocarcinus*] Velvet swimming crab

Roedean: 1981-84: fairly frequent spring and summer, very sparing autumn-winter though more persistent autumn 1982. Occurred under stones variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.6-0.4 m ACD, especially the lower levels.

Kemp Town: 1981-84: not infrequent spring and summer, very sparing autumn-winter though more persistent autumn 1982. Occurred under stones variously distributed in the *Mytilus/Palmaria-Laminaria* transition and the *Laminaria* belt, *c*. 1.0-0.4 m ACD; larger specimens (up to 100 mm carapace breadth) favoured the shelter of concrete overhangs (dismantled railway) available in the *Mytilus/Palmaria-*

Laminaria transition, *c*. 1.0 m ACD. One record at a higher shore level, viz. a single specimen, *c*. 60 mm carapace breadth, in a pool on the storm-damaged terminal section of the groyne *c*. 100 m west of the marina west breakwater root, *c*. 1.3 m ACD, 13.6.84.

Ovingdean: occasional checks at this locality indicated a distribution and abundance similar to that found at Roedean.

Breeding: paired crabs (one pair per occasion): 19.9.82 (Kemp Town); 1.11.82 (Kemp Town); 29.8.84 (Kemp Town); 28.9.84 (Ovingdean).

Mortality: large numbers of *N. puber* found dead on the Roedean strand-line early March 1986 following an exceptionally cold February; quite frequent dead *Carcinus maenas* scattered amongst them.

Pirimela denticulata (Montagu, 1808) [Bourdillon-Casanova, 1960: 148 (young stages); Ingle, 1980: 106; 1983: 76] Toothed Pirimela

Roedean: found twice: one juvenile, 3.3 mm carapace breadth, amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 0.8 m ACD, 15.9.81; another juvenile, 3.5 mm carapace breadth, amongst *Corallina officinalis* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.2 m ACD, 12.8.84. Both specimens presumably third young crab stage (third stage with 3.5 mm carapace breadth according to Bourdillon-Casanova 1960).

Family **XANTHIDAE**

Pilumnus hirtellus (Linnaeus, 1761) [Lebour, 1928: 532 (young stages); Ingle, 1980: 112; 1983: 116] Hairy crab

Roedean: 1981-84: recorded frequently spring-autumn, very sparingly in winter. Found under stones and occasionally in disused piddock burrows variously distributed in the *F. serratus*-Rhodophyta transition and the Rhodophyta and *Laminaria* belts, *c*. 1.3-0.6 m ACD. One record at a higher shore level, viz. several specimens under a stone in the *F. serratus* belt, *c*. 1.6 m ACD, 10.9.84.

A single megalopa amongst *Obelia geniculata* on a *Laminaria saccharina* frond, *Laminaria* belt, *c*. 0.6 m ACD, 17.8.81.

Very young crab stages, *c*. 1.3-3.1 mm carapace breadth (first young crab stage 1.28 mm carapace breadth according to Lebour 1928), amongst algae (*Corallina officinalis, Halurus flosculosus, Polysiphonia fucoides* supporting epiphytic *Ceramium* sp.) and in heterogeneous rock/groyne scrapings (including e.g. *Halichondria panicea, Hymeniacidon perlevis, Dynamena pumila, Bugulina turbinata*), variously collected from the *F. serratus*-Rhodophyta transition and the Rhodophyta and *Laminaria* belts, *c*. 1.3-0.6 m ACD (carapace breadth of each specimen indicated): 11.11.81 (2.5 mm, 3.1 mm); 3.2.83 (1.8 mm); 9.8.83 (1.3 mm); 24.8.83 (2.2 mm); 8.9.83 (1.3 mm, 1.3 mm, 1.7 mm, 1.7 mm); 23.9.83 (2.0 mm); 7.10.83 (2.0 mm); 28.8.84 (1.8 mm); 10.10.84 (2.6 mm).

Kemp Town: 1981-84: recorded frequently in all seasons though less widespread in winter. Found under stones in the *Mytilus/Palmaria-Laminaria* transition and the *Laminaria* belt, *c*. 1.0-0.5 m ACD.

Megalopae: one amongst *Polysiphonia fucoides, Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 31.7.84; one in a scraping of *Halichondria panicea* and *Dynamena pumila* from a concrete vertical (dismantled railway), *c*. 1.0 m ACD, 13.8.84.

First stage crabs, 1.3 mm carapace breadth: one in a scraping of *Halichondria panicea, Dynamena pumila* and *Sertularella gaudichaudi* from a concrete vertical (dismantled railway), *c*. 1.0 m ACD, 21.8.82; one

in a scraping of *Dynamena pumila* from the downward-facing surface of a concrete overhang (dismantled railway), *c*. 1.0 m ACD, 13.8.84.

Ovingdean: occasional checks at this locality indicated a distribution and abundance similar to that found at Roedean.

Breeding: megalopae recorded 17.8.81, 31.7.84, 13.8.84; first stage crabs, 1.3 mm carapace breadth, 21.8.82, 9.8.83, 8.9.83, 13.8.84. Detailed records above (Roedean and Kemp Town).

Subphylum **CHELICERATA**

Class **ARACHNIDA**

Order ARANEAE

Family **LINYPHIIDAE**

Halorates reprobus (O. P.-Cambridge, 1879) [Locket & Millidge, 1953: 325] Shore money spider

Roedean: found on seven occasions variously distributed on the sea-wall and groynes, *c*. 9.0-5.2 m ACD (MHWN = 5.1): 10.5.83; 5.7.83; 7.10.83; 26.11.83; 26.7.84; 10.9.84; 23.10.84. A single male amongst HW algal debris (dry *F. vesiculosus*) overlying shingle, 2.8.83.

Only once more than a few, viz. 100 or more on top of the sea-wall, *c*. 9.0 m ACD, 26.11.83: half of these scattered here and there, the rest concentrated into an area of several sq. m *c*. 150 m west of the regular monitoring site in company with *Halophiloscia couchii, Orchestia mediterranea, Coelopa (Fucomyia) frigida* and *Thoracochaeta zosterae* amongst/near algal debris (mainly *Palmaria palmata* and *Laminaria saccharina*) recently swept by heavy seas to the higher level from around the HW mark on the adjacent predominantly shingle beach. A sample comprised 15 females (two immature) and nine males (one immature).

Kemp Town: single specimens twice: on the east face of a groyne, *c*. 7.5 m ACD, 14.5.83; amongst HW algal debris overlying shingle, 11.7.83.

Subclass **ACARI**

Order MESOSTIGMATA Gamasid mites

Family **CYRTOLAELAPIDAE**

Hydrogamasus littoralis (Canestrini & Canestrini, 1881) [Halbert, 1920: 120]

Roedean: undetected 1981-82, recorded sparingly subsequently: 28.3.83; 26.5.83; 25.6.83; 25.7.83; 1.4.84; 14.4.84; 31.5.84; 12.6.84; 12.7.84; 6.10.84; 6.12.84. Found amongst barnacles (groyne verticals), *c*. 3.3-2.6 m ACD (MTL = 3.5), and in scrapings dominated by detritus-laden *Laomedea flexuosa* (rock verticals and the downward-facing surfaces of rock overhangs), *c*. 3.0-1.9 m ACD. One record at a higher shore level, viz. a single female on *Blidingia minima* (east-facing groyne vertical), *c*. 4.3 m ACD, 12.7.84.

Single specimens per sample, save twice amongst *Laomedea flexuosa* (rock verticals), *F. vesiculosus* belt, *c*. 2.6 m ACD: eight females and three males, 25.7.83; seven males, 14.4.84.

Kemp Town: three records only (east-facing groyne vertical): several small clusters of mites, 3-5 or a few more per cluster, locally on *Blidingia minima* mat, *c*. 4.5 m ACD, 24.5.82 (a sample comprised six females and five males); one male amongst barnacles (supporting *B. minima*), *c*. 5.1 m ACD (MHWN), 15.4.83; a female amongst barnacles, *c*. 4.1 m ACD, 14.7.84.

Family **EVIPHIDIDAE**

Thinoseius fucicola (Halbert, 1920) [Evans & Browning, 1953: 414 as *Lasioseius*]

Roedean: a single deutonymph collected from *Blidingia minima* mat on a groyne, *c*. 6.0 m ACD (MHWS = 6.5), 14.5.84. (Phoretic hosts for this species include *Coelopa (Fucomyia) frigida* and *Coelopa (Coelopa) pilipes*.)

Family **PARASITIDAE**

Parasitus kempersi Oudemans, 1902 [Hyatt, 1980: 280]

Roedean: a single deutonymph collected from HW algal debris overlying shingle, 17.8.83.

Order SARCOPTIFORMES

Suborder ASTIGMATA

Family **HYADESIIDAE**

Hyadesia fusca (Lohmann, 1894) [Lohmann, 1896: 86 as *Lentungula*; Halbert, 1915: 108; Bénard, 1961: 95]

Roedean: common and recorded throughout the monitoring period December 1983-March 1985. Found amongst *Blidingia minima* (groynes), *c*. 6.0-4.3 m ACD, and barnacles (groynes, dismantled railway), *c*. 5.2-2.2 m ACD. Number per sample, small-moderate, with a large number once amongst *B. minima*, *c*. 5.5 m ACD, 12.7.84.

Kemp Town: common and recorded throughout the monitoring period, December 1983-January 1985. Found amongst *Blidingia minima* (groyne, west face of marina west breakwater root), *c*. 5.4-3.9 m ACD, and barnacles (encrusting the same structures), *c*. 5.4-3.3 m ACD. Number per sample, small-moderate, with a large number once amongst *B. minima* (groyne), *c*. 5.3 m ACD, 14.7.84.

Suborder ORIBATIDA Beetle or Oribatid mites

Family **AMERONOTHRIDAE**

Ameronothrus maculatus (Michael, 1882) [Schubart, 1975: 49]

Note. Lichens with which this species was associated were sampled only in 1986: February at Kemp Town; March-April at Roedean and Ovingdean.

Roedean: sampling indicated that moderate numbers were associated with most specimens of *Caloplaca flavescens* sparingly distributed in the supralittoral zone (mostly growing on the north (landward) face of the sea-wall parapet, and only very rarely on the wall which protected the foot of the cliff above the level of the sea-wall), *c*. 9.4-10.3 m ACD (MHWS = 6.5), and with the majority of *Xanthoria parietina* specimens scattered here and there on a variety of concrete structures (walls, posts etc.) in the terrestrial region, from near the foot of the cliff (opposite the marina east breakwater root) to cliff-top level, *c.* 9.6-33.5 m ACD.

Kemp Town: present in moderate numbers under the few specimens of *Xanthoria parietina* occurring on the north face of the promenade wall (near the top of the wall), the wall backing the beach to the west of the marina west breakwater root, terrestrial-supralittoral transition, *c*. 11.4 m ACD.

Ovingdean: associated with *X. parietina*, terrestrial region, cliff-top level.

Ameronothrus marinus (Banks, 1896) [Schubart, 1975:48]

Roedean: common and recorded throughout the monitoring period December 1983-March 1985. Found chiefly amongst barnacles (groynes, dismantled railway), *c*. 5.3-2.2 m ACD, and occasionally (nymphs only) amongst *Blidingia minima* (groynes), *c*. 6.0-4.3 m ACD.

Number per sample of barnacles, small-moderate, the moderate numbers occurring mainly in samples collected from groynes, *c*. 4.1-3.1 m ACD; large numbers twice in samples collected from the same groyne, *c*. 4.1 m ACD, 12.7.84 and 4.1.85. Small numbers in *B. minima* samples.

Kemp Town: sampling revealed a local population amongst barnacles on the east face of a groyne, *c*. 4.1 m ACD: 2.12.83-11.1 85 (the full monitoring period). One record at a higher shore level, viz. two adults amongst barnacles (west face of marina west breakwater root), *c*. 5.4 m ACD, 14.7.84. Number per sample always small.

Order TROMBIDIFORMES

Suborder PROSTIGMATA

Family **BDELLIDAE** Snout mites

Neomolgus littoralis (Linnaeus, 1758) [Thor, 1931: 61 as *Molgus (Molgus*); Atyeo & Tuxen, 1962: 287]

Roedean: a conspicuous spring-summer species 1981-84, but regular monitoring undertaken only 1983-84 when sparing April, common May-July and scarce August. Observed regularly at HW levels amongst/on algal debris and stones (flint pebbles and cobbles) on the predominantly shingle beach, and running about in the littoral fringe (Cyanophyta and *Blidingia/Porphyra* belts) and the upper eulittoral (barnacles/*Fucus spiralis*) on groynes, *c*. 7.5-5.2 m ACD (MHWN = 5.1). Two records at a higher shore level on top of the sea-wall, supralittoral zone, *c*. 9.0 m ACD: a single individual, 12.5.83; several, 8.6.84. One record at a lower shore level, viz. several specimens on a groyne vertical (supporting barnacles and small scattered *Fucus vesiculosus*), *c*. 4.0 m ACD, 18.7.83.

Kemp Town: recorded only twice during the regular monitoring period 1983-84. Found at HW levels amongst/on algal debris and stones on the predominantly shingle beach in the vicinity of the marina west breakwater root: occasional, 12.6.83; frequent, 11.7.83.

Family **ERYTHRAEIDAE**

Abrolophus rubipes (Berlese & Trouessart, 1889) [Halbert, 1915: 115; 1920: 145 as *Rhyncholophus*]

Roedean: a single specimen running across Cyanophyta-coated concrete (groyne), *c*. 6.1 m ACD (MHWS = 6.5), 21.9.84.

Family **HALACARIDAE** Sea mites

Note. Members of this family were monitored December 1983-February 1985 (-March 1985 for species associated with *Blidingia minima* and barnacles) at Roedean, and December 1983-February 1985 (-January 1985 for species associated with *B. minima* and barnacles) at Kemp Town. Barnacles were sampled predominantly from artificial structures.

Subfamily RHOMBOGNATHINAE

Isobactrus ungulatus Bartsch, 1975 [Green & Macquitty, 1987: 26]

Roedean: common and recorded throughout the monitoring period 1.12.83-4.3.85. Found chiefly amongst barnacles (groynes, dismantled railway, chalk bedrock, embedded flints protruding from the chalk), *c*. 5.3-2.2 m ACD, and very occasionally amongst *Blidingia minima* (groynes), *c*. 5.2-4.3 m ACD. Number per sample of barnacles, small-moderate; small numbers in *B. minima* samples.

Kemp Town: common throughout the monitoring period 2.12.83-11.1.85. Found amongst barnacles (groyne, west face of marina west breakwater root), *c*. 5.4-1.3 m ACD, rarely below *c*. 2.3 m ACD. Four specimens amongst *Blidingia minima* (groyne), the sample including a few small barnacles, *c*. 5.3 m ACD, 8.10.84. Number per sample of barnacles, small-moderate.

Metarhombognathus armatus (Lohmann, 1893) [Green & Macquitty, 1987: 30]

Roedean: common and recorded throughout the monitoring period 1.12.83-4.3.85. Found chiefly amongst *Blidingia minima* (groynes), *c*. 6.0-4.3 m ACD, and sparingly amongst barnacles (groynes), *c*. 5.2-3.6 m ACD. Three records at lower shore levels on the chalk platform, *F. vesiculosus* belt: single specimens amongst barnacles, *c*. 3.1 m ACD, 17.12.83, and *c*. 2.7 m ACD, 31.1.84; two specimens amongst *Ulva* sp., *c*. 2.9 m ACD, 2.3.84.

Number per sample of *B. minima*, small-large, the large numbers occurring December (1983), January (1984, 1985), March (1985), April (1984), *c*. 5.9-5.1 m ACD; small numbers in barnacle samples, save twice, when moderate numbers were found in samples collected from the same groyne, *c*. 5.2 m ACD, 4.1.85 and 4.3.85.

Kemp Town: common and recorded throughout the monitoring period 2.12.83-11.1.85. Found chiefly amongst *Blidingia minima* (groyne, west face of marina west breakwater root), *c*. 6.0-3.9 m ACD, and sparingly amongst barnacles (encrusting the same structures), *c*. 5.4-2.3 m ACD.

Number per sample of *B. minima*, small-large, the large numbers occurring December (1983), January (1985), March (1984), April (1984), *c*. 6.0-5.3 m ACD; small numbers in barnacle samples.

Breeding: larvae recorded amongst *B. minima*: 1.12.83; 2.12.83; 14.1.84; 3.3.84; 10.3.84 (Rottingdean); 14.4.84; 17.4.84; 14.7.84; 4.1.85; 11.1.85; 4.3.85. Under-recorded due to inadequate extraction from samples.

Rhombognathides seahami (Hodge, 1860) [Green & Macquitty, 1987: 42]

Roedean: a very commonly occurring species found mainly amongst algae (tube-dwelling diatom, Ectocarpales indet., *Cladophora sericea, Rhodothamniella floridula, Gelidium pusillum, Corallina officinalis, Gracilaria verrucosa, Ceramium* sp*., Halurus flosculosus, Laurencia pinnatifida, Polysiphonia fucoides, P. nigra, Rhodomela confervoides*), frequently amongst hydroids (*Laomedea flexuosa, Dynamena pumila, Sertularia argentea*) and occasionally in other habitats (*Spirobranchus lamarcki* tubes encrusting a flint cobble, detrital sandy sediment bound by *Polydora ciliata* chimneys, barnacles), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD: 1.12.83-8.2.85.

Number per sample of alga, small-moderate, and per sample of hydroid, small, save once, when a moderate number occurred amongst *Sertularia argentea*, *c*. 1.1 m ACD, 2.3.84. Small numbers in other habitat samples.

Kemp Town: frequently recorded: small numbers found in various habitats (Ectocarpales indet., *Bryopsis* sp., *Ceramium* sp., *Polysiphonia fucoides, Hartlaubella gelatinosa, Dynamena pumila, Sertularella gaudichaudi, Sertularia argentea*, barnacles) variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.3-0.6 m ACD: 2.12.83-9.2.85. Two records at higher shore levels: a single specimen amongst *Ceramium* sp. attached to *Mytilus edulis* (concrete ledge adjoining the marina west breakwater root), *c*. 3.3 m ACD (MTL = 3.5), 20.12.84; a single specimen amongst barnacles (west face of marina west breakwater root), *c*. 1.6 m ACD, 11.1.85.

Rhombognathides trionyx trionyx (Trouessart, 1899) [Green & Macquitty, 1987: 36 as *R. merrimani needleri* Newell]

Roedean: single specimens found five times amongst barnacles (four times sampled from groynes and once from chalk bedrock (indicated): *c*. 3.1 m ACD, 1.12.83; *c*. 3.6 m ACD and *c*. 2.7 m ACD (bedrock, *F. vesiculosus* belt), 31.1.84; *c*. 3.1 m ACD, 2.3.84; *c*. 3.1 m ACD, 6.10.84.

Kemp Town: found five times amongst barnacles (groyne): two specimens, *c*. 4.1 m ACD, and three, *c*. 3.3 m ACD, 2.12.83; one, *c*. 3.3 m ACD, 17.4.84; one, *c*. 4.1 m ACD, 8.10.84; six, *c*. 3.3 m ACD, 11.1.85.

Rhombognathus notops (Gosse, 1855) [Green & Macquitty, 1987: 48]

Roedean: occurred very frequently and in diverse samples (tube-dwelling diatoms, *Gelidium pusillum, Ceramium* sp., *Polysiphonia fucoides, Laomedea flexuosa, Dynamena pumila, Sertularia argentea*, rock scrapings rich in sandy detritus and containing a variety of small algal and hydroid growths, barnacles) variously collected from the *F. vesiculosus, F. serratus* and Rhodophyta belts and the Rhodophyta-*Laminaria* transition, *c*. 3.1-0.7 m ACD: 1.12.83-4.3.85. Number per sample, small, save once, when a moderate number occurred amongst diatom-coated *Ceramium* sp. from a pool, *c*. 3.0 m ACD, 26.9.84.

Kemp Town: only three records: one specimen amongst barnacles (groyne), *c*. 1.3 m ACD, 14.7.84; another amongst *Ceramium* sp. attached to *Mytilus edulis* (concrete ledge adjoining the marina west breakwater root), *c*. 3.3 m ACD, 20.12.84; three amongst barnacles (west face of the marina west breakwater root), *c*. 1.6 m ACD, 11.1.85.

Subfamily HALACARINAE

Agauopsis brevipalpus (Trouessart, 1889) [Green & Macquitty, 1987: 55]

Roedean: a single female (telofemur of right leg I with the two characteristic ventral spiniform setae (no sign of development or loss of a third), but telofemur of left leg I with three ventral spiniform setae) amongst barnacles (dismantled railway), *c*. 2.2 m ACD, 12.7.84.

Kemp Town: single specimens found three times amongst barnacles: a female, *c*. 3.3 m ACD, and a deutonymph, *c*. 2.3 m ACD, 2.12.83 (groyne vertical); a female, *c*. 5.4 m ACD (MHWN = 5.1), 17.4.84 (west face of marina west breakwater root).

Arhodeoporus gracilipes (Trouessart, 1889) [Green & Macquitty, 1987: 70]

Roedean: single specimens on three occasions: a female in a scraping of *Dynamena pumila* and *Morchellium argus* (a small developing colony supporting epizoic *Clytia hemisphaerica* basally) from a rock vertical, Rhodophyta belt, *c*. 1.2 m ACD, 2.3.84; a female in a rock scraping dominated by sandy detritus and containing a variety of small algal growths (e.g. *Ulva* sp., *Cladophora sericea, Ceramium*

spp.), *F. vesiculosus* belt, *c*. 2.6 m ACD, 6.10.84; a male amongst *Rhodothamniella floridula* (binding sandy detritus), Rhodophyta belt, *c*. 1.0 m ACD, 23.10.84.

Kemp Town: a single female amongst *Sertularia argentea* suspended from the underside of a concrete overhang (dismantled railway), *c*. 0.8 m ACD, 3.3.84.

Copidognathus loricifer André, 1946 [Green & Macquitty, 1987: 94]

Roedean: a single male in a rock scraping composed mainly of *Dynamena pumila* and *Cryptosula pallasiana*, and containing small algal growths (*Cladostephus spongiosus*, *Fucus* germlings, *Phymatolithon lenormandii*), Rhodophyta belt, *c*. 1.1 m ACD, 1.12.83.

Copidognathus oculatus (Hodge, 1863) [Green & Macquitty, 1987: 96]

Roedean: quite frequently recorded: found amongst algae (Ectocarpales indet., *Rhodothamniella floridula*, *Ceramium* sp., *Polysiphonia fucoides*) and hydroids (*Laomedea flexuosa, Dynamena pumila, Sertularia argentea*) variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.6-0.5 m ACD: 17.12.83; 31.1.84; 15.2.84; 16.3.84; 1.4.84; 12.6.84; 29.6.84; 12.7.84; 28.8.84; 4.1.85; 18.1.85; 8.2.85. Single specimens per sample, save once, when two (one of each sex) were found amongst Ectocarpales indet., Rhodophyta belt, *c*. 1.1 m ACD, 29.6.84.

Kemp Town: five records only: one male amongst *Sertularia argentea* suspended from the underside of a concrete overhang (dismantled railway), *c*. 0.9 m ACD, 18.1.84; two females amongst *Polysiphonia fucoides*, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 2.6.84; one male amongst *P. fucoides*, *Mytilus/Palmaria-Laminaria* transition, *c.* 1.0 m ACD, 13.8.84; one female in a scraping of barnacles, small *Mytilus edulis* and several small *Molgula cf.socialis* from a groyne, *c*. 1.3 m ACD, 8.10.84; one male amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), *Laminaria* belt, *c*. 0.8 m ACD, 24.10.84.

Copidognathus remipes (Trouessart, 1894) [Green & Macquitty, 1987: 98]

Roedean: a single male amongst *Polysiphonia fucoides*, *F. serratus* belt, *c*. 1.8 m ACD (MLWN = 1.9), 6.12.84.

Copidognathus rhodostigma (Gosse, 1855) [Green & Macquitty, 1987: 102]

Kemp Town: one female and a nymph in a scraping of barnacles, small *Mytilus edulis* and several small *Molgula cf. socialis* from a groyne, *c*. 1.3 m ACD (ALTL), 8.10.84.

Halacarellus balticus (Lohmann, 1889) [Green & Macquitty, 1987: 118 as *Thalassarachna baltica*]

Roedean: frequently recorded: found amongst barnacles (groynes, dismantled railway), *c*. 4.1-1.1 m ACD, and in heterogeneous rock scrapings generally dominated by hydroids (*Laomedea flexuosa* and/or *Dynamena pumila*) and containing a variety of small algal growths (e.g. *Fucus* germlings, *Gelidium pusillum, Ceramium* spp.) variously distributed in the *F. vesiculosus, F. serratus* and Rhodophyta belts, *c*. 2.7-1.1 m ACD: 17.12.83; 30.12.83; 31.1.84; 2.3.84; 1.4.84; 14.4.84; 31.5.84; 12.6.84; 12.7.84; 6.10.84; 10.10.84; 20.11.84; 6.12.84; 4.1.85; 12.1.85; 4.2.85. Number per sample, 1-4.

Kemp Town: a single female amongst barnacles (west face of marina west breakwater root), *c*. 1.6 m ACD, 11.1.85.

Thalassarachna basteri (Johnston, 1836) [Green & Macquitty, 1987: 120]

Roedean: a commonly occurring species found mainly amongst algae (tube-dwelling diatom, Ectocarpales indet., *Cladophora rupestris, C. sericea, Rhodothamniella floridula, Gelidium pusillum, Corallina officinalis, Ceramium* sp., *Polysiphonia fucoides*) and not infrequently in other habitats (*Dynamena pumila, Sertularia argentea, Spirobranchus lamarcki* tubes encrusting a flint cobble, barnacles), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD: 1.12.83-8.2.85. Number per sample of alga, 1-8, and in other habitat samples, 1-2.

Breeding: larvae recorded: 2.3.84; 31.5.84; 12.6.84.

Thalassarachna striata (Lohmann, 1889) [Green & Macquitty, 1987: 130]

Roedean: single specimens on five occasions: a female in a scraping of barnacles and small *Molgula cf. socialis* from a collapsed section of a groyne, *c*. 1.1 m ACD, 1.12.83; a female in a heterogeneous rock scraping including young *Ceramium* sp., *Dynamena pumila* (dominant) and *Cryptosula pallasiana*, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, 31.1.84; a female amongst *Polysiphonia fucoides, F. serratus* belt, *c*. 1.8 m ACD, 6.12.84; a male amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.1 m ACD, 12.1.85; a female amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, 18.1.85.

Class **PYCNOGONIDA** Sea spiders

Note. Members of this class were monitored March 1981-February 1985 at Roedean and May 1981-February 1985 at Kemp Town.

Order PANTOPODA

Suborder EUPANTOPODIDA

Superfamily ASCORYNCHOIDEA

Family **AMMOTHEIDAE**

Achelia echinata Hodge, 1864 [King, 1974: 28; Bamber, 2010: 74]

Roedean: occurred frequently July 1981-May 1982, otherwise only occasionally, viz. 20.3.81, 20.8.82, 14.4.83, 23.9.83, 7.10.83, 15.2.84, 20.11.84. Found amongst algae (*Corallina officinalis, Polysiphonia fucoides*) and hydroids (*Dynamena pumila, Sertularia argentea*), variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.9-0.5 m ACD. Number per sample of alga, 1-6, and of hydroid, 1-2.

Kemp Town: found on nine occasions only: associated with *Dynamena pumila*, 20.7.81, 2.8.81, *Ceramium* sp. (epiphytic on *Chondrus crispus*), 18.8.81, *Polysiphonia fucoides*, 10.12.81, 25.4.82, *D. pumila*, 24.5.82, *P. fucoides*, 22.7.82, 5.9.82, 29.3.83, variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD. Number per sample of alga, 1-2, and of *D. pumila*, 1-4.

Breeding: ovigerous males recorded July-August 1981 and April-May 1982.

Ammothella longipes (Hodge, 1864) [King, 1974: 24 as *Achelia longipes*; Bamber, 2010: 86]

Roedean: a very commonly occurring species found chiefly amongst algae (*Corallina officinalis, Halurus flosculosus, Polysiphonia fucoides* usually supporting epiphytic *Ceramium* sp.), predominantly

P. fucoides, and sparingly amongst hydroids (*Dynamena pumila, Sertularia argentea*), variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.3-0.5 m ACD: 20.3.81-8.2.85. A single record at a higher shore level, viz. a juvenile amongst *Laomedea flexuosa, F. vesiculosus* belt, *c*. 3.0 m ACD, 28.3.83. Number per sample of *P. fucoides*, 1-14, of other algae, 1-9, and of hydroid, 1-3.

Kemp Town: found commonly amongst *Polysiphonia fucoides* (usually supporting epiphytic *Ceramium* sp.), not infrequently amongst *Dynamena pumila* and occasionally in other habitats (*Gracilaria verrucosa, Ceramium* sp. (epiphytic on *Chondrus crispus*), *Sertularia argentea*), variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD: 19.5.81-29.12.82; 12.2.83-10.8.83; 8.10.83; 19.11.83; 18.1.84; 2.5.84; 15.5.84; 31.7.84-24.10.84; 9.2.85. A single record at a higher shore level, viz. one ovigerous male in a scraping of *Dynamena pumila* and barnacles, groyne, *c*. 1.3 m ACD, 14.7.84. Number per sample of *P. fucoides*, 1-39, of *D. pumila*, 1-8, and in other habitat samples, 1-2.

Breeding: ovigerous males recorded July-December 1981, January-December 1982, February-November 1983, May-October 1984 and February 1985; larvigerous males recorded July, November, December 1981, February, May-July, October-December 1982, April, June, September 1983 and May, August, December 1984.

Superfamily NYMPHONOIDEA

Family **NYMPHONIDAE**

Nymphon brevirostre Hodge, 1863 [King, 1974: 18 as *N. rubrum*; Bamber, 2010: 120]

Roedean: found on three occasions amongst *Sertularia argentea* on the same fallen-into-disrepair concrete groyne, *c*. 1.3 m ACD (ALTL): one ovigerous male, 3.2.83; one ovigerous male, 27.2.83; two specimens, 11.6.83.

Kemp Town: a single specimen amongst *Dynamena pumila* epizoic on *Mytilus edulis* on a concrete vertical (dismantled railway), *c*. 0.9 m ACD, 20.7.81.

Nymphon gracile Leach, 1814 [King, 1974: 16; Bamber, 2010: 126]

Kemp Town: a single larvigerous male amongst *Dynamena pumila* epizoic on *Mytilus edulis*, groyne, *c*. 1.3 m ACD, 7.5.82.

Family **CALLIPALLENIDAE**

Callipallene brevirostris (Johnston, 1837) [Stock, 1952: 5 as *C. brevirostris brevirostris*; Bamber, 2010: 154]

Roedean: one ovigerous male amongst *Polysiphonia fucoides*, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, 30.4.81.

Callipallene tiberi (Dohrn, 1881) [Stock, 1952: 8 as *C. emaciata tiberi*; Bamber, 2010: 164]

Roedean: two specimens amongst *Dynamena pumila*, downward-facing surface of a concrete overhang (groyne), *c*. 1.1 m ACD, 20.11.84.

Kemp Town: one male with egg remnants on ovigers amongst *D. pumila*, concrete vertical (block detached from groyne), *c*. 1.2 m ACD, 7.5.82; one ovigerous male amongst *D. pumila* epizoic on *Mytilus edulis*, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 24.5.82.

Superfamily PHOXICHILIDIOIDEA

Family **PHOXICHILIDIIDAE**

Anoplodactylus angulatus (Dohrn, 1881) [King, 1974, 42; Bamber, 2010: 196]

Roedean: occurred frequently. Found mainly amongst *Corallina officinalis* and *Polysiphonia fucoides* and rarely in other habitats (*Gelidium pusillum, Halurus flosculosus, Dynamena pumila, Sertularia argentea*), variously distributed in the *F. serratus* and Rhodophyta belts, *c*. 2.3-0.7 m ACD: 20.3.81; 1.8.81; 17.8.81; 11.11.81-25.2.82; 8.4.82-6.7.82; 22.9.82; 31.10.82; 3.2.83; 11.2.83; 14.4.83-25.6.83; 18.11.83-15.2.84; 1.4.84; 20.11.84; 8.2.85. Number per sample of *C. officinalis* and *P. fucoides*, 1-5, and in other habitat samples, 1-2.

Kemp Town: two records only (*Corallina officinalis*, apparently one of the favoured habitats at Roedean, was absent from Kemp Town): one female amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp. and *Electra pilosa*), *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 9.4.82; one male in a scraping of *Dynamena pumila* and *Sertularella gaudichaudi* from a landward-facing concrete vertical (dismantled railway), *c*. 0.9 m ACD, 31.7.84.

Breeding: ovigerous males recorded November, December 1981, April, May, July, October 1982 and April, May 1983.

Anoplodactylus petiolatus (Krøyer, 1844) [King, 1974: 44; Bamber, 2010: 204]

Roedean: single specimens found on six occasions: amongst *Gelidium pusillum*, Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 9.3.82; amongst *Sertularia argentea* on a concrete vertical (groyne), *c*. 0.6 m ACD, 25.3.82; amongst *Polysiphonia fucoides*, Rhodophyta belt, *c*. 0.8 m ACD, 6.6.82; amongst *Halurus flosculosus*, *Laminaria* belt, *c*. 0.6 m ACD, 16.3.84; amongst *Bryopsis* sp. on the side of a pool, *F. serratus* belt, the surrounding rocks *c*. 2.1 m ACD, 14.4.84; amongst *Gelidium pusillum*, *c*. 0.7 m ACD, 8.2.85.

Kemp Town: four records: one ovigerous male amongst *Sertularella gaudichaudi*, downward-facing surface of a concrete overhang (dismantled railway), *c*. 0.8 m ACD, 16.9.81; two specimens amongst *Polysiphonia fucoides*, *Laminaria* belt, *c*. 0.5 m ACD, 25.4.82; two specimens including an ovigerous male amongst *P. fucoides*, *c*. 0.6 m ACD, 29.3.83; two specimens amongst *P. fucoides*, *c*. 0.5 m ACD, 10.8.83.

Anoplodactylus pygmaeus (Hodge, 1864) [King, 1974: 46; Bamber, 2010: 206]

Roedean: a commonly occurring species found amongst algae (*Cladostephus spongiosus, Cladophora rupestris, Corallina officinalis, Polysiphonia fucoides*) and hydroids (*Hartlaubella gelatinosa, Laomedea flexuosa, Dynamena pumila, Sertularia argentea*), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD, especially amongst *Laomedea flexuosa* in the *F. vesiculosus* belt and *Polysiphonia fucoides* at lower levels: 26.4.81; 15.6.81; 17.8.81; 27.10.81-24.4.82; 6.6.82-28.12.82; 28.3.83; 14.4.83; 26.4.83; 11.6.83; 10.7.83; 7.10.83-31.1.84; 16.3.84-29.6.84; 6.10.84-18.1.85. Number per sample of alga, 1-6, and in hydroid samples, 1-4.

Kemp Town: found quite frequently amongst *Polysiphonia fucoides*, 1-2 per sample, variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD: 10.12.81-10.3.82; 7.6.82; 23.6.82; 5.9.82-30.11.82; 29.3.83; 27.4.83; 26.6.83-10.8.83. Only once in another habitat, viz. one ovigerous male amongst *Dynamena pumila* on small *Chondrus crispus* collected from a concrete vertical (dismantled railway), *c*. 0.7 m ACD, 14.5.83.

Breeding: ovigerous males recorded April, August, December 1981, April, June, July 1982, April-August, November 1983, April, May, December 1984 and January 1985.

Phoxichilidium femoratum (Rathke, 1799) [King, 1974: 36; Bamber, 2010: 212]

Roedean: a commonly occurring species found amongst algae (*Corallina officinalis, Halurus flosculosus, Polysiphonia fucoides* (mainly)) and hydroids (*Hartlaubella gelatinosa, Dynamena pumila, Sertularia argentea*) variously distributed in and at levels below the *F. serratus*-Rhodophyta transition, *c*. 1.3-0.5 m ACD: 20.3.81-18.6.81; 1.8.81; 27.10.81; 7.2.82-6.8.82; 15.10.82; 31.10.82; 3.2.83; 11.2.83; 27.2.83; 14.4.83-24.8.83; 21.10.83-30.7.84; 26.9.84. Two records at higher shore levels in the *F. serratus* belt: one male amongst *P. fucoides* (supporting epiphytic *Ceramium* sp., *Coryne muscoides* and *Electra pilosa*), *c.* 1.5 m ACD, 13.11.82; two females and a male amongst *Halurus flosculosus* in a pool, the surrounding rocks *c*. 1.9 m ACD (MLWN), 7.10.83. Number per sample of alga, 1-10, and of hydroid, 1-6.

Kemp Town: of common occurrence amongst *Polysiphonia fucoides* and hydroids (*Gonothyraea loveni, Hartlaubella gelatinosa, Dynamena pumila, Sertularella gaudichaudi, Sertularia argentea*), variously distributed *c*. 1.1-0.5 m ACD: 19.5.81-20.7.81; 29.9.81; 15.10.81; 9.1.82-19.10.82; 17.3.83-10.8.83; 2.5.84; 15.5.84; 31.7.84- 24.10.84; 9.2.85. Number per sample of *P. fucoides*, 1-8, and of hydroid, 1-14.

Breeding: ovigerous males recorded October 1981, January, February 1982 and November, December 1983.

Family **ENDEIDAE**

Endeis spinosa (Montagu, 1808) [King, 1974: 52 as *E. laevis*; Bamber, 2010: 218]

Roedean: recorded on six occasions: one ovigerous male amongst *Polysiphonia fucoides*, Rhodophyta belt, *c*. 0.8 m ACD, 1.8.81; two females amongst *Sertularia argentea*, *Laminaria* belt, *c*. 0.6 m ACD (MLWS), 24.4.82; one female and two males amongst *S. argentea*, concrete vertical (base of groyne), *c*. 1.1 m ACD, 15.2.84; one male amongst *S. argentea*, concrete vertical (base of groyne), *c*. 1.1 m ACD, 16.3.84; one male amongst *S. argentea*, concrete vertical (base of groyne), *c*. 0.5 m ACD, 14.4.84; one juvenile amongst *P. fucoides, F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 23.10.84.

Subphylum **HEXAPODA**

Class **COLLEMBOLA** Springtails

Note. Members of this class were monitored January 1983-December 1984.

Family **ISOTOMIDAE**

Archisotoma besselsi (Packard, 1877) [Strenzke, 1955: 37-39, fig. 15]

Roedean: single specimens with scrapings of detritus-coated barnacles from a groyne, *c*. 3.9 m ACD (MTL = 3.5), 15.2.84 and *c*. 3.3 m ACD, 14.4.84; 15-20 specimens on the surface of a pool, the pool located in a corner formed by the intersection of the base of the east face of a groyne with shingle composing the lower boundary of the beach, *c*. 3.3 m ACD, 23.10.84.

Axelsonia littoralis (Moniez, 1890) [Strenzke, 1955: 45-46, fig. 18]

Roedean: two specimens in a scraping of barnacles from the west face of a groyne, *c*. 3.6 m ACD, 31.1.84.

Kemp Town: a single individual in a scraping of barnacles from the east face of the groyne *c*. 100 m west of the marina west breakwater root, *c*. 3.3 m ACD, 2.5.84.

Isotoma maritima Tullberg, 1871 [Strenzke, 1955: 42-43, fig. 17]

Kemp Town: undetected during the regular monitoring period 1983-84, but found by chance on one earlier occasion, viz. a cluster of *c*. 80 specimens floating on the surface of water (fresh or salt?) retained in a small upturned plastic cap (from a bottle or suchlike) deposited with other strand-line debris on the shingle beach, 5.10.82.

Family **NEANURIDAE**

Anurida maritima (Guérin-Méneville, 1836) [Strenzke, 1955: 23, fig.6]

Roedean: recorded May-November 1983 (common July-August) and May-December 1984 (common June-early September). Found predominantly on groynes, chiefly amongst barnacles, c. 5.5-3.3 m ACD, and not infrequently on *Blidingia minima*, *c*. 5.9-4.3 m ACD; intermittently on rock pool surfaces, usually in clusters, especially pools adjacent to groynes, *F. vesiculosus* and upper *F. serratus* belts, *c*. 3.3-2.0 m ACD; only four times elsewhere: in rock scrapings (rich in sediment and including small algal and hydroid growths), *F. vesiculosus* belt, *c*. 2.6 m ACD, 25.7.83 (a few) and 12.7.84 (one); on barnacle-encrusted foundation blocks of the dismantled railway, *c*. 2.3 m ACD, 23.9.83 (a few) and 12.7.84 (frequent).

Class **INSECTA**

Note. Members of this class were monitored January 1983-December 1984.

Subclass **PTERYGOTA**

Order COLEOPTERA

Family **HYDROPHILIDAE** Water scavenger beetles

Cercyon depressus Stephens, 1829 [Fowler, 1887: 255; Joy, 1932: 290, pl. 84, fig. 16]

Roedean: a single specimen amongst HW algal debris overlying shingle, 24.5.84.

Kemp Town: two specimens amongst HW algal debris overlying shingle, 11.7.83.

Family **STAPHYLINIDAE** Rove beetles

Subfamily ALEOCHARINAE

Tribe HOMALOTINI

Heterota plumbea (G. Waterhouse, 1858) [Fowler, 1888: 64, pl. 42, fig. 7 as *Alianta*; Joy, 1932: 78, pl. 23, fig. 3]

Roedean: two specimens on top of the sea-wall, supralittoral zone, *c*. 9.0 m ACD, 26.11.83.

Kemp Town: a single specimen, apparently investigating crevices in the west face of the groyne *c*. 100 m west of the marina west breakwater root, *c*. 6.5 m ACD (MHWS), 26.7.83.

Subfamily OMALIINAE

Tribe OMALIINI

Micralymma marinum (Strøm, 1783) [Joy, 1932: 94, pl. 28, fig. 4; Tottenham, 1954: 28, fig. 51]

Roedean: adults recorded April, May, July, August, December 1983 (always sparing) and March-August, November 1984 (always sparing) also a few observed by chance, January and March 1985. Found on *Blidingia minima* (groynes), *c*. 5.9-4.3 m ACD, and amongst barnacles (groynes), *c*. 5.5-4.1 m ACD.

Larvae: single specimens on eight occasions: 12.1.83; 1.12.83; 17.1.84; 2.3.84; 1.4.84; 14.4.84; 8.6.84; 12.7.84. Found on *B. minima* and amongst barnacles on groynes within the same intertidal range as the adults.

Kemp Town: adults: single specimens collected twice with scrapings from the east face of the groyne *c*. 100 m west of the marina west breakwater root: mixed *Ulothrix* sp., *Urospora* sp. and *Blidingia minima*, *c*. 6.1 m ACD, 27.5.83; *B. minima*, *c*. 5.3 m ACD, 26.6.83.

Subfamily STAPHYLININAE

Tribe STAPHYLININI

Subtribe PHILONTHINA

Cafius xantholoma (Gravenhorst, 1806) [Fowler, 1888: 282, pl. 60, fig. 8; Joy, 1932: 115, pl. 33, fig. 3]

Roedean: adults recorded on seven occasions: locally fairly numerous, emerging from the cover of strand-line algal debris (mostly dried-up *Fucus*) and nearby shingle, to make short low escaping flights from the rising tide as it approached HW, *c*. 6.4 m ACD, 1418 BST, 15.6.83; several amongst HW algal debris overlying shingle, 5.7.83; one on top of the sea-wall, supralittoral zone, *c*. 9.0 m ACD, 15.8.83;

very common, including pairs in copula, flying eastwards over the HW levels of the beach which supported a discontinuous strand-line dominated by *Laminaria* and *Fucus*, often partially buried in shingle, 0900-0930 BST (sunny and very warm, neap tide ebbing at *c*. MTL), 8.6.84; single specimens amongst HW algal debris overlying shingle, 7.8.84 and 21.9.84; three on top of the sea-wall, supralittoral zone, *c*. 9.0 m ACD, 25.9.84.

Kemp Town: adults: found only twice: a single specimen on the groyne *c*. 100 m west of the marina west breakwater root, supralittoral zone, *c*. 9.2 m ACD, 5.4.83; two amongst HW algal debris overlying shingle, 12.6.83.

Order DIPTERA

Suborder NEMATOCERA

Infraorder CULICOMORPHA

Family **CHIRONOMIDAE** Non-biting midges

Subfamily CLUNIONINAE

Tribe CLUNIONINI

Clunio marinus Haliday, 1855 [Wingate, 1906: 47, pl. 2, fig. 12; Goetghebuer, 1932: 142, figs. 253-6; Coe *et al*., 1950: 171-2, fig. 192 g]

Roedean: males running over a variety of substrata (e.g. *F. serratus, Rhodothamniella floridula* (binding sandy detritus), sediment-coated rocks, surface film of rock pools) variously distributed in the *F. vesiculosus, F. serratus* and Rhodophyta belts, *c*. 2.6-0.8 m ACD: 12.5.83 (common); 21.10.83 (a few locally, *c.* 1.3 m ACD); 30.3.84 (a single specimen on the surface of a pool, *c*. 2.6 m ACD); 14.5.84 (common); 24.10.84 (a single specimen running over *R. floridula*, *c*. 0.8 m ACD).

Several pairs in copula on sediment-coated rocks, *F. serratus* belt, *c*. 1.9 m ACD (MLWN), 12.5.83; a few females with fairly numerous males on sediment-coated rocks, Rhodophyta belt, *c*. 1.0 m ACD, 14.5.84.

Kemp Town: males running over/between mussels on the groyne *c*. 100 m west of the marina west breakwater root, *c*. 1.5-1.2 m ACD (ALTL = 1.3): 27.4.83 (common); 15.5.84 (frequent).

Tribe TELMATOGETONINI

Thalassomyia frauenfeldi Schiner, 1856 [Chevrel, 1903: 1-29, pl. 1, as *Scopelodromus isemerinus*; Coe *et al*., 1950: 172, fig. 192 f]

Roedean: adults recorded April-December 1983 (fairly common late April, May) and May-November 1984 (fairly common late May). Mostly found running over *Blidingia minima* mat on the vertical faces of groynes, *c.* 6.1-4.3 m ACD, and occasionally over adjacent/nearby barnacles on the same groynes, *c*. 5.5-3.9 m ACD (average level of the barnacle line = 5.5).

Kemp Town: adults recorded April-November 1983 (common late April, May) and May-September 1984 (not uncommon May). Found running over *Blidingia minima* mat (predominantly) and

adjacent/nearby barnacles (groyne, west face of marina west breakwater root) at intertidal levels similar to Roedean.

Subfamily ORTHOCLADIINAE

Halocladius varians (Staeger, 1839) [Coe *et al*., 1950: 148 as *Cricotopus vitripennis* (Meigen)]

Roedean: adults recorded April-August 1983 (common April, May) and April-July 1984 (common June). Occurred on the wing across the chalk platform variously dispersed over the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.3-0.6 m ACD (average level of the lower boundary of the beach = 3.3). One record at a higher shore level, viz. a moderate number locally over/on wet algal debris (mainly *Laminaria saccharina, F. serratus* and *Ulva lactuca*) freshly deposited on shingle, *c*. 5.1 m ACD (MHWN), the tide ebbing at *c*. 3.3 m ACD at the time of observation, *c*. 0700 BST, 2.8.83.

Captured specimens were exclusively female, the majority taken shortly after alighting on rocks, algae etc., when presumably seeking sites for oviposition.

Kemp Town: adults recorded April-July 1983 (common throughout, especially June) and April-June 1984 (never common). Occurred in flight near/over *Mytilus*-dominated surfaces (west face of marina west breakwater root/adjoining ledge, groyne, chalk platform), *c*. 3.3-1.1 m ACD, the lower level mussels (storm-damaged terminal section of groyne, chalk platform), *c*. 1.3-1.1 m ACD, supporting *Palmaria palmata*.

Captured specimens were exclusively female, the majority taken shortly after alighting, when presumably searching, e.g. under *P. palmata* fronds or between mussels, for oviposition sites.

Predation: one *Aphrosylus celtiber* specimen with a captured *H. varians* on barnacles, east-facing groyne vertical, *c*. 3.3 m ACD, Kemp Town, 11.7.83.

Thalassosmittia thalassophila (Bequaert & Goetghebuer, 1913) [Goetghebuer, 1932: 124, fig. 211 as *Smittia*; Coe *et al*., 1950: 165 as *Hydrobaenus (Smittia) thalassophilus*]

Roedean: adults, predominantly males, on the surface film of rock pools, especially those in sheltered situations adjacent to the bases of groynes and the foundation blocks of the dismantled railway, variously distributed in the *F. vesiculosus* and upper *F. serratus* belts, *c*. 3.3-2.0 m ACD: 5.5.83 (widespread, number per pool surface, small-moderately large, including pairs in copula); 15.5.83 (a moderate number on one pool surface); 21.10.83 (fairly widespread, number per pool surface, small-moderate); 11.5.84 (small numbers on several pool surfaces); 17.5.84 (widespread, number per pool surface, small); 24.5.84 (a small number on one pool surface); 31.5.84 (small numbers on several pool surfaces); 26.9.84 (a small number including a pair in copula on one pool surface); 23.10.84 (a moderate number on one pool surface). A few small swarms collecting over a pool, *F. vesiculosus* belt, *c*. 3.1 m ACD, 24.5.84.

Kemp Town: adults, predominantly males, collecting in small swarms near/over barnacle-encrusted and *Mytilus*-covered surfaces (west face of marina west breakwater root and adjoining ledge (tiny pools between the mussels on the ledge), groyne), *c*. 3.3-1.5 m ACD: 24.9.83; 15.5.84; 30.6.84. Several specimens on the surface of a small pool (storm-damaged terminal section of groyne), *c*. 1.5 m ACD, 2.6.84.

Chironomid larvae

Roedean: 1983-84: found very commonly and in all seasons. Occurred in diverse samples (tube-dwelling diatoms, Ectocarpales indet., *Ulva* sp., *Blidingia minima, Cladophora sericea, Rhodothamniella*

floridula, Gelidium pusillum, Corallina officinalis, Ceramium spp., Halurus flosculosus, Laurencia pinnatifida, Polysiphonia fucoides, Laomedea flexuosa, Dynamena pumila, Sertularia argentea, Kirchenpaueria pinnata, barnacles, a variety of rock scrapings dominated by sandy detritus and containing small algal and hydroid growths etc.), variously collected across the entire eulittoral zone, *c*. 5.5-0.7 m ACD, especially amongst barnacles from artificial structures (groynes, dismantled railway), *c*. 5.2-2.2 m ACD. One record in the sublittoral fringe, viz. a single specimen amongst sediment-laden *Sertularia argentea*, *c*. 0.5 m ACD (MLWS = 0.6), 14.5.84.

Number per sample of barnacles, small-occasionally moderate; small numbers in other samples, save once, when a moderate number occurred amongst tube-dwelling diatoms laden with sandy detritus, *F. vesiculosus* belt, *c*. 3.1 m ACD, 14.4.83.

Kemp Town: 1983-84: found frequently and in all seasons. Occurred chiefly amongst barnacles (groyne, west face of marina west breakwater root/adjoining ledge), *c*. 5.4-2.1 m ACD, and very sparingly amongst *Blidingia minima* (groyne), *c*. 5.6-5.3 m ACD. Otherwise only three records and at lower shore levels: several specimens amongst *Polysiphonia nigra, Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 12.6.83; one amongst Ectocarpales indet. (epiphytic on a *Laminaria saccharina* frond), *Laminaria* belt, *c*. 0.9 m ACD, 11.7.83; several amongst Ectocarpales indet. (groyne), *c*. 1.3 m ACD, 15.5.84.

Number per sample of barnacles, small-occasionally moderate; small numbers in *B. minima* samples.

Chironomid pupae

Roedean: recorded amongst barnacles (groynes, dismantled railway) variously distributed *c*. 5.2-1.3 m ACD: 10.5.83; 11.6.83; 25.7.83; 1.5.84; 14.5.84; 31.5.84; 12.6.84; 12.7.84; 30.7.84. Number per sample, 1-a few. A single specimen in a scraping of *Blidingia minima* (including a few barnacles) from the east face of a groyne, *c*. 5.2 m ACD, 6.10.84.

Kemp Town: recorded amongst barnacles (west face of marina west breakwater root, groyne) variously distributed *c*. 5.2-3.3 m ACD: 26.7.83; 14.7.84; 8.10.84. Number per sample, 1-a few. Single specimens found twice in scrapings of *B. minima* (including a few barnacles) from the east face of the same groyne, *c*. 5.3 m ACD: 26.7.83; 8.10.84.

Chironomid adult eclosion

Halocladius varians recorded twice: a chance encounter prior to the regular monitoring period, viz. a female partially emerged from the pupa in a sample of sediment-laden tube-dwelling diatoms, *F. vesiculosus* belt, *c.* 2.8 m ACD, 25.3.82, Roedean; a male partially emerged from the pupa with sandy detritus included in a sample of *Molgula cf. socialis*, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 15.4.83, Kemp Town.

Thalassosmittia thalassophila: a single record of a male just emerged from the pupa in a scraping of barnacles from the west face of a groyne, *c*. 2.6 m ACD, 11.6.83, Roedean.

Suborder BRACHYCERA

Infraorder ASILOMORPHA

Superfamily EMPIDOIDEA

Family **DOLICHOPODIDAE** Long-legged flies

Subfamily HYDROPHORINAE

Aphrosylus celtiber Haliday, 1855 [Fonseca, 1978: 42, 43, fig. 128]

Roedean: adults recorded June-October 1983 (scarce late June, common July-August, quite frequent September, occasional October) and June-November 1984 (occasional early June, common late June-August, frequent early September, occasional mid-September-early November). Observed at various shore levels ranging from the locally spray-extended upper limit of the Cyanophyta belt of the littoral fringe on top of the sea-wall parapet *c*. 300 m west of the regular sampling area, where local beach-depletion exposed the sea-wall to direct pounding by waves, down to the *F. serratus*-Rhodophyta transition of the lower eulittoral, *c*. 9.7-1.3 m ACD (ALTL). Most commonly seen running over wet surfaces and dispersing downshore with the ebbing tide, particularly favouring barnacle-encrusted surfaces (groynes, rocks, dismantled railway), *c*. 5.5-2.2 m ACD. Fairly numerous (with *Aphrosylus ferox*) on damp beach pebbles and sand near the edge of high water, *c*. 5.5 m ACD (MHWN = 5.1), 26.7.84.

Pairs in copula recorded 21.6.84 and 12.7.84.

Kemp Town: adults recorded June-September 1983 (common late June through July, quite frequent August, occasional September) and June-September 1984 (common late June-August, occasional September). Observed mainly on barnacle-encrusted surfaces (groyne, west face of marina west breakwater root), *c*. 5.6-2.3 m ACD.

Pairs in copula recorded 13.8.84. A pupa with well-developed adult characters inside an empty *Semibalanus balanoides*, east-facing groyne vertical, *c*. 4.3 m ACD, 23.10.83.

Predation: one *A. celtiber* specimen with a captured *Halocladius varians* on barnacles, east-facing groyne vertical, *c*. 3.3 m ACD, 11.7.83.

Aphrosylus ferox Haliday, 1851 [Fonseca, 1978: 42-44, fig. 131]

Roedean: adults recorded June-September 1983 (common July-August) and June-September 1984 (common July-August). Similarly distributed to *Aphrosylus celtiber*, likewise dispersing downshore with the falling tide and favouring barnacle-encrusted surfaces (groynes, rocks, dismantled railway), but no records below *c*. 1.9 m ACD (MLWN). Locally fairly numerous (with *A. celtiber*) on damp beach pebbles and sand near the edge of high water, *c*. 5.5 m ACD, 26.7.84, including pairs in copula.

Kemp Town: a few adults on barnacles encrusting steel piling (west face of marina west breakwater root), *c*. 5.0-4.0 m ACD, 25.8.83, otherwise unrecorded.

Aphrosylus spp. larvae [Dyte, 1967: 120, fig. 2]

Roedean: found very frequently and at all times of the year 1983 and 1984 almost exclusively amongst barnacles (groynes, rocks, dismantled railway), *c*. 4.2-2.2 m ACD. A single specimen in a sediment-rich rock scraping dominated by *Laomedea flexuosa* and including *Cryptosula pallasiana* and a variety of small algal growths (e.g. *Ulva* sp., *Ceramium* spp.), *F. vesiculosus* belt, *c*. 2.7 m ACD, 31.5.84. (A later record of a single specimen at the entrance to a narrow chalk crevice (2 mm wide at entrance), *F. vesiculosus* belt, *c*. 2.9 m ACD, 7.6.86). Number per sample of *c*. 20-30 adult barnacles, 1-3.

Kemp Town: found frequently and in all seasons 1983 and 1984 exclusively amongst barnacles (groyne, west face of marina west breakwater root), *c.* 5.4-2.3 m ACD. Number per sample of *c*. 20-30 adult barnacles, 1-4.

Infraorder MUSCOMORPHA

Section SCHIZOPHORA

Subsection ACALYPTRATA

Superfamily CARNOIDEA

Family **CANACIDAE** Beach flies

Canace nasica (Haliday, 1839) [Becker in Lindner, 1926: 106, 107, fig. 128; Séguy, 1934: 401, figs 559, 560]

Roedean: adults recorded June, August, October 1983 (not uncommon June, a single specimen August, not uncommon October) and May, June, August, September, November 1984 (not uncommon late May-June, a few specimens August, not uncommon September, a few specimens early November). Collected from groynes chiefly at littoral fringe levels (Cyanophyta and *Blidingia minima* belts), *c*. 7.9-5.5 m ACD, and occasionally at upper eulittoral levels (on/near downshore extensions from the the littoral fringe of *B. minima* on groyne verticals), *c*. 5.4-4.6 m ACD.

Pairs in copula recorded 11.6.83, 7.10.83, 28.10.83, 24.5.84.

Larvae: 1983-84: found frequently and in all seasons chiefly amongst *Blidingia minima* (groynes), *c*. 6.0 -5.2 m ACD, and rarely amongst barnacles (groynes), *c*. 5.3-4.1 m ACD. Number per sample of *B. minima* (occasionally including a few usually small barnacles), 1-7, and per sample of *c*. 20-30 adult barnacles, 1-4.

Pupae: found on three occasions: one, four (two of them with adult eclosion apparently imminent) and one, with samples of *B. minima* from groynes, *c*. 5.9, 5.5 and 5.3 m ACD respectively, 25.7.83; one specimen inside an empty *Semibalanus balanoides* in a predominantly *B. minima* sample (groyne), *c*. 5.3 m ACD, 18.10 83; one amongst *B. minima* (groyne), *c*. 5.5 m ACD, 6.10.84.

Kemp Town: 1983-84: adults undetected.

Larvae: found on two occasions amongst *Blidingia minima* (the groyne *c*. 100 m west of the marina west breakwater root): one, *c*. 6.0 m ACD, 14.7.84; two, *c*. 5.6 m ACD, 8.10.84.

A single pupa amongst *B. minima* (groyne as above), *c*. 5.6 m ACD, 14.7.84.

Superfamily SCIOMYZOIDEA

Family **COELOPIDAE** Seaweed flies

Coelopa (Fucomyia) frigida (Fabricius, 1805) [Séguy, 1934: 313, fig. 436; Burnet, 1960: 9, 10, figs 1, 2, 3a, 3b]

Roedean: adults recorded January-December 1983 (moderate numbers January, scarce February-early September, large numbers late September-December) and January-December 1984 (numbers similar to 1983, but fewer late September and December). Occurred amongst HW algal debris overlying the beach,

and amongst algal debris and stones at the higher level on top of the sea-wall, *c*. 9.0 m ACD (MHWS = 6.5) where intermittently cast by autumn/winter storms. Frequently in flight, fairly large numbers in the autumn, the shore-flanking cliff blocking any landward dispersal. Observed from time to time resting/walking in open situations (uppermost parts of groynes, sea-wall) away from the cover of algal debris and beach material.

Kemp Town: records of adults 1983 and 1984 approximately paralleled Roedean. Particularly numerous amongst large accumulations of decaying HW algal debris (including *Desmarestia aculeata, Laminaria saccharina, Palmaria palmata*) overlying shingle in the western vicinity of the marina west breakwater root, 24.9.83. Fairly numerous and widespread on the wing over the general sea-front area, accompanied by *Thoracochaeta zosterae* (q.v.) nearest the beach, with no evidence of unidirectional flight, 0900-1030 GMT (predicted HW, 0847 GMT, 6.3 m ACD) in mild, calm, misty conditions, 2.11.83. Small numbers trapped at home near the sea-front, 24.11.83 and 28.11.83.

Coelopa (Coelopa) pilipes Haliday, 1838 [Séguy, 1934: 313, figs 424-6, 434; Burnet, 1960: 9, 10, fig. 3c]

Roedean: adults recorded through 1983 and 1984 with seasonality and distribution amongst HW algal debris etc., broadly similar to *C. (Fucomyia) frigida*; apparently outnumbering the latter only in late August and September 1984.

Kemp Town: adults recorded only late September-December 1983 (sparing and greatly outnumbered by *C. (Fucomyia) frigida*) and late September-December 1984 (common late September-November, fewer December; outnumbered *C. (Fucomyia) frigida* late September). A single specimen trapped at home, 25.11.84.

Family **SEPSIDAE** Black scavenger flies

Orygma luctuosum Meigen, 1830 [Séguy, 1934: 310, 311, figs 429, 431-3 as *O. luctuosa*; Pont, 1979: 11, fig. 2b, pl. 4, figs 72, 73]

Roedean: adults recorded May-October, December 1983 (common late June-early September, a single specimen 30 December) and May-October 1984 (common late June-early September). Occurred amongst HW algal debris (*Laminaria*, *Fucus* etc., predominantly the drier material) overlying shingle. Fairly frequent flying eastwards a few cm above the level of the undercliff walk (obsolete sea-wall) which backed the marina, presumably migrating from the Kemp Town beach, 1530 BST, 14.5.84 (a warm sunny day, earlier May having been cool).

Kemp Town: adults recorded June-August, November 1983 (fairly common June-July) and May, July, August, October 1984 (fairly common July). Amongst HW algal debris overlying shingle.

Superfamily SPHAEROCEROIDEA

Family **SPHAEROCERIDAE**

Subfamily LIMOSININAE

Thoracochaeta brachystoma (Stenhammar, 1854) [Pitkin, 1988: 40, figs 278, 380, 523, 604]

Roedean: adults collected twice with *T. zosterae* from HW algal debris overlying shingle: four *brachystoma* with seven *zosterae* (a random sample from a moderately large *Thoracochaeta* population), 28.10.83; one *brachystoma* with 18 *zosterae* (a random sample from a moderately large population), 28.12.83.

Kemp Town: adults collected three times with *T. zosterae* from HW algal debris overlying shingle: one *brachystoma* with 11 *zosterae* (a random sample from a moderately large *Thoracochaeta* population), 11.7.83; six *brachystoma* with 52 *zosterae* (a random sample from a very large population), 4.11.83; six *brachystoma* with 44 *zosterae* (a random sample from a very large population, on this occasion amongst

algal debris overlying shingle *c*. HW-MTL), 19.11.83. An isolated individual on the east face of the groyne *c*. 100 m west of the marina west breakwater root, HW algal debris on the shingle nearby, 27.9.84.

Thoracochaeta zosterae (Haliday, 1833) [Pitkin, 1988: 40, figs 202, 279, 280, 379, 522, 605]

Roedean: adults recorded January-December 1983 (large numbers August-December (especially September-November), otherwise sparing, save once, when locally fairly numerous 11 June) and January-December 1984 (large numbers September-November (especially November), otherwise sparing, save twice, when moderately numerous 31 January and 11 May). Occurred amongst HW algal debris overlying the beach, and amongst algal debris and stones at the higher level on top of the sea-wall, *c*. 9.0 m ACD (MHWS = 6.5), where intermittently cast by autumn/winter storms. Moderate numbers on the wing, mainly above the sea-wall: 26.11.83; 25.9.84; 1.11.84.

Kemp Town: records of adults approximately paralleled Roedean: present at all times of the year 1983 and 1984, large numbers occurring chiefly in the autumn when HW algal debris was maximal. Abundant amongst algal debris overlying shingle, c. HW-MTL, 19.11.83. Fairly numerous on the wing just landward of the beach, in company with *Coelopa (Fucomyia) frigida* (q.v.), 2.11.83, and rather fewer on the wing, locally over the sea-front area, 5.11.83.

Subsection CALYPTRATA

Superfamily MUSCOIDEA

Family **ANTHOMYIIDAE**

Subfamily ANTHOMYIINAE

Fucellia maritima (Haliday, 1838) [Wingate, 1906: 289; Séguy, 1923: 178, figs 312-4; Karl, 1930: 80, fig. 89; Colyer & Hammond, 1951: 307, pl. 82, fig. 6]

Roedean: adults recorded June-October 1983 and late March, May, June, August, September 1984. Found amongst HW algal debris (especially the drier material) overlying shingle and variously dispersed on groynes from HW levels down to *c*. 4.1 m ACD, usually on barnacles at the lower levels. Number per occasion small, save 31.8.83 and 21.6.84 when moderate numbers were found amongst HW algal debris and on barnacles repectively.

Kemp Town: adults recorded June-August 1983, undetected 1984. A small number per occasion amongst HW algal debris overlying shingle, save 25.8.83 when fairly numerous settling on *Ulva*-covered and barnacle-encrusted surfaces of the groyne *c*. 100 m west of the marina west breakwater root, *c*. 3.5 m ACD (MTL).

Family **SCATHOPHAGIDAE**

Subfamily SCATHOPHAGINAE

Ceratinostoma ostiorum (Haliday in Curtis, 1832) [Séguy, 1934: 692, fig. 889; Collin, 1958: 40, 41, 49]

Roedean: apparently scarce. Adults captured on four occasions only, having settled on the vertical faces of groynes at various levels in the littoral fringe (i.e. at levels above the average level of the barnacle line, *c*. 5.5 m ACD) and the uppermost eulittoral: one female and two males, 15.9.83; one male, 8.6.84; one male, 3.9.84; one female and two males, 21.9.84.

Phylum **MOLLUSCA**

Note. Members of this phylum were monitored January 1982-February 1985 but additionally presented for various reasons of interest are a number of records falling outside this period (none earlier than 1981), see e.g. *Lacuna vincta, Nucella lapillus, Tritia reticulata, Hermaea bifida, Myosotella myosotis, Barnea candida*.

Class **POLYPLACOPHORA**

Order CHITONIDA

Family **ACANTHOCHITONIDAE**

Acanthochitona crinita (Pennant, 1777) [Jones & Baxter, 1987: 88 as *A. crinitus*] (A specimen confirmed by Dr J. M. Light)

Roedean: one, 7.2 mm long, in a small ridge-top pool, the pool dominated by *Corallina officinalis*, *F. serratus* belt, *c*. 1.9 m ACD (MLWN), 23.5.82.

Kemp Town: one, 22 mm long, on the side of a flint cobble, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 19.10.82.

Family **LEPIDOCHITONIDAE**

Lepidochitona cinerea (Linnaeus, 1767) [Jones & Baxter, 1987: 62 as *L. cinereus*]

Roedean: found very sparingly (probably more common than records suggest). Occurred on flint cobbles, almost exclusively on their undersides, variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.5-0.5 m ACD (single specimens, exceptions indicated): 25.2.82 (several); 9.3.82 (several); 25.3.82; 20.8.82; 4.10.82; 28.12.82; 31.1.84; 15.2.84. An earlier record of a single specimen on the chalk bedrock, *c*. 1.0 m ACD, 20.3.81.

Kemp Town: recorded on five occasions only. Found on the undersides of flint cobbles, variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.4 m ACD (single specimens, one exception indicated): 25.4.82; 5.10.82; 12.2.83; 15.4.83; 4.11.83 (two).

Class **SCAPHOPODA**

Order DENTALIIDA

Family **DENTALIIDAE**

Antalis vulgaris (da Costa, 1778) [Jones & Baxter, 1987: 100 as *A. vulgare*] (Identified by Dr J. M. Light)

Roedean: Single shells on six occasions, variously distributed *c*. 1.9-1.0 m ACD: 6.6.82; 15.10.82; 25.6.83 (occupied by juvenile *Pagurus bernhardus*); 31.1.84; 16.3.84; 30.7.84 (occupied by juvenile *P. bernhardus*).

Class **GASTROPODA**

Subclass **PATELLOGASTROPODA**

Family **PATELLIDAE**

Patella vulgata Linnaeus, 1758 [Graham, 1988: 77] Common limpet

Roedean: common throughout the monitoring period, January 1982-February 1985. Found at littoral fringe levels on groynes as high as *c*. 6.1 m ACD (MHWS = 6.5), rarely above *c*. 5.8 m ACD, and across the entire eulittoral zone, *c*. 5.5 m ACD (average level of the barnacle line (upper limit of barnacles in quantity) on groynes) to *c*. 0.7 m ACD (average level of the Rhodophyta-*Laminaria* transition on the chalk platform); restricted to groynes in the upper half of its range by the predominantly shingle beach overlying the chalk platform down to *c*. 3.3 m ACD. Especially conspicuous in association with barnacles on artificial structures (groynes (the available surfaces mainly vertical), foundation blocks of the dismantled railway), *c*. 5.1-1.1 m ACD, and on the bedrock in open areas, presumably maintained by the limpets, in the *F. vesiculosus* belt and the *F. vesiculosus-F. serratus* transition, *c*. 3.1-2.3 m ACD; increasingly sparing at lower levels on the chalk platform across the *F. serratus* and Rhodophyta belts, though locally common on stable flint cobbles to the east of the regularly monitored area, *c*. 0.7 m ACD. The limpets were commonly encrusted with barnacles.

Kemp Town: common throughout the monitoring period, January 1982-February 1985, but restricted to artificial structures (west face of marina west breakwater and its root, groyne) by the predominantly flint shingle beach overlying the chalk platform down to *c*. 1.3 m ACD (ALTL) and the apparent unsuitability of the platform at lower shore levels (the platform, where not scoured bare by mobile sand, dominated by *Mytilus/Palmaria* before transition to *Laminaria saccharina*, *c*. 1.0 m ACD). Recorded on browsing excursions at littoral fringe levels on the west face of the marina west breakwater root near its seaward end as high as *c*. 6.6 m ACD (MHWS = 6.5) and to inadequately assessed higher levels still. Conspicuously associated with barnacles down through the eulittoral (the barnacle line (upper limit of barnacles in quantity) varying between *c*. 5.8 m ACD (top of the steel piling that partly constituted the west face of the marina west breakwater root) and *c*. 5.6 m ACD (groyne)), the barnacles forming extensive sheets on vertical surfaces above *c*. 3.3 m ACD but patchy at lower levels due to prevalence of *Mytilus edulis*. Limpets were commonly encrusted with barnacles and unrecorded below *c*. 1.0 m ACD.

Patella pellucida (Linnaeus, 1758) [Graham, 1988: 82 as *Helcion pellucidum*] Blue-rayed limpet (Two forms: *P. pellucida (pellucida)* and *P. pellucida (laevis)*)

Roedean: *P. pellucida (pellucida)* found on two occasions on *Laminaria saccharina* fronds: one, 8 mm shell length, *c*. 0.7 m ACD, 14.4.83; two (basal portion of the same frond), *c*. 8 mm shell length, *c*. 1.0 m ACD, 21.10.83. A single *P. pellucida (laevis)*, 14 mm shell length, in a *Laminaria hyperborea* holdfast, strand-line, 15.12.81.

Kemp Town: *P. pellucida (pellucida)* not infrequently detected 1982-83, but only two records of single individuals subsequently. Found chiefly on *Laminaria saccharina* fronds (*L. saccharina* much reduced overwinter) and rarely on *F. serratus* (basal portions of fronds) growing as local clumps on the foundation blocks of the dismantled railway, variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts (and the transition between the two), *c*. 1.1-0.4 m ACD: 26.3.82-22.7.82; 5.10.82-1.11.82; 17.3.83-27.4.83; 24.9.83; 8.10.83; 17.2.84; 9.3.85. An earlier record of a single specimen, 8 mm shell length, on a *Chondrus crispus* frond, *c*. 1.1 m ACD, 15.11.81.

One-a few per occasion, save 26.3.82, 25.4.82 and 8.10.83 when moderate numbers were found on *L. saccharina* fronds, up to five per frond, chiefly *c*. 0.6 m ACD (MLWS) downwards (LW *c*. 0.5, 0.4 and 0.5 m ACD on respective occasions).

Ovingdean: *P. pellucida (pellucida)* noted on three occasions, *c*. 0.7 m ACD: 13 specimens, 5-6 mm shell length, on *Laminaria digitata*, clustered at the stipe-frond junction of the thallus, 3.11.83; several specimens here and there on *L. digitata* and *L. saccharina*, 16.2.84; one, 7 mm shell length, on the basal portion of a *L. saccharina* frond, 28.9.84.

Subclass **VETIGASTROPODA**

Family **TROCHIDAE**

Steromphala cineraria (Linnaeus, 1758) [Graham, 1988: 104 as *Gibbula cineraria*] Grey top shell

Roedean: common throughout the monitoring period, January 1982-February 1985. Found under stones *c*. 3.1 m ACD downwards, but widespread only below *c*. 1.9 m ACD (MLWN).

Kemp Town: common throughout the monitoring period. Found amongst mussels and under stones on the chalk platform *c*. 1.2 m ACD downwards, and amongst mussels on a storm-damaged groyne as high as *c*. 1.3 m ACD (ALTL). Fairly numerous on *Palmaria palmata* and *Laminaria saccharina*, no higher than the basal portions of the fronds, at and just below the low water mark, *c*. 0.5 m ACD, 10.8.83 (LW *c*. 0.2 m below the predicted level due to persistent northerly winds).

Subclass **CAENOGASTROPODA**

Order LITTORINIMORPHA

Family **LITTORINIDAE**

Subfamily LACUNINAE

Lacuna vincta (Montagu, 1803) [Lebour, 1937: 125 (spawn); Graham, 1988: 154] Banded chink shell

Roedean: found frequently 1981 and 1982, sparingly 1983 and only twice 1984. Occurred on algae (*Halidrys siliquosa* (a drift fragment), *Corallina officinalis, Chondrus crispus, Cystoclonium purpureum, Ceramium* sp. (mainly epiphytic on *Polysiphonia fucoides*), *Halurus flosculosus, Cryptopleura ramosa, P. fucoides, Rhodomela confervoides*), variously distributed in the *F. serratus*-Rhodophyta transition and the Rhodophyta and *Laminaria* belts, *c*. 1.3-0.5 m ACD: 30.4.81-11.11.81; 9.3.82; 24.4.82-20.8.82; 4.10.82; 26.5.83-10.7.83; 23.9.83-3.11.83; 29.6.84; 30.7.84. A single specimen (3.5 mm shell height), on the underside of a stone, *F. vesiculosus* belt, *c*. 2.5 m ACD, 11.1.82.

Number per sample of alga only twice exceeded 10, viz. 14 (0.5-1.0 mm shell height), *Corallina officinalis*, *c*. 1.3 m ACD, 18.6.81, and 35 (1.0-2.0 mm shell height), *Rhodomela confervoides*, *c*. 0.7 m ACD, 21.7.82; otherwise mainly 1-3 per sample.

Kemp Town: found sparingly 1981 and 1982, and only twice 1983; undetected 1984. Occurred on algae (*Palmaria palmata, Ceramium* sp. (mostly epiphytic on *Polysiphonia fucoides*), *P. fucoides, Polysiphonia nigra*), variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.6 m ACD: 19.5.81; 3.6.81; 18.8.81; 16.9.81; 29.9.81; 15.11.81; 25.1.82; 7.5.82-22.7.82; 5.10.82; 12.6.83; 26.6.83.

Number per sample of alga only twice exceeded five, viz. nine on two occasions on *Polysiphonia fucoides* supporting epiphytic *Ceramium* sp. (the snails mainly on *Ceramium*), *c*. 1.1 m ACD: 0.5-1.0 mm shell height, 19.5.81; 1.1-1.8 mm shell height, 26.6.83.

Combined Roedean and Kemp Town records, 1981-84: number of snails collected per month (four years total) with their shell height range in parentheses: two (3.5 and 6.0 mm) January; undetected February; one (8.0 mm) March; eight (0.4-0.6 mm) April; 24 (0.4-1.0 mm) May; 59 (0.5-2.0 mm) June; 45 (1.0-2.4 mm) July; 11 (1.6-3.0 mm) August; 12 (2.0-4.0 mm) September; nine (2.0-3.2 mm) October; four (2.0-4.0 mm) November; undetected December.

Breeding

A ripe female, 8 mm shell height, on a piece of drift *Halidrys siliquosa* floating in a channel (open to LW), *c*. 0.6 m ACD, 9.3.82, Roedean.

Yellow spawn rings: one on a *Palmaria palmata* frond, *c*. 0.7 m ACD, 26.3.82, Kemp Town; one on a *Chondrus crispus* frond, *c*. 0.8 m ACD, 14.4.83, Roedean; single specimens on two *P. palmata* fronds, *c*. 1.1 and 0.7 m ACD respectively, 27.4.83, Kemp Town.

Similar green spawn rings (almost certainly belonging to another species according to Lebour (1937), but attributable to *L. vincta* in the opinion of Dr J. M. Light (pers. comm. 18.2.91)) on the fronds of *Palmaria palmata* (one exception indicated) variously distributed *c.* 1.1-0.7 m ACD, Kemp Town: two 10.3.82; several 26.3.82; two 28.2.83; three 17.3.83; one 29.3.83; one on a *Laminaria saccharina* frond 15.4.83; one 27.4.83; several 14.5.83.

Recently settled snails, i.e. under 1.0 mm shell height (Fretter & Manly 1977), on algae (*Corallina officinalis, Ceramium* sp. (mainly epiphytic on *Polysiphonia fucoides*), *P. fucoides, Polysiphonia nigra*), variously collected at Roedean and Kemp Town, *c*. 1.3-0.6 and *c*. 1.1-1.0 m ACD respectively: 30.4.81-18.6.81; 24.4.82-6.6.82; 26.5.83; 11.6.83; 12.6.83.

Subfamily LITTORININAE

Littorina fabalis (W. Turton, 1825) [Goodwin & Fish, 1977: 241-254 as *L. mariae*; Graham, 1988: 172 as *L. mariae*] Flat periwinkle (The very similar *L. obtusata* (Linnaeus, 1758) may well have been sparingly present amongst the *L. fabalis* population at Roedean but undetected due to inadequate sampling.)

Roedean: common (yellow and dark reticulated morphs; occasional orange) throughout the monitoring period, January 1982-February 1985. Found on/near *F. vesiculosus* and *F. serratus*, *c*. 3.2-1.5 m ACD, chiefly on *F. vesiculosus*, *c*. 3.2-2.3 m ACD. A few specimens recorded on *F. serratus* as low as *c*. 1.2 m ACD, 23.9.83 and 19.12.84.

Littorina littorea (Linnaeus, 1758) [Graham, 1988: 166] Common periwinkle

Roedean: common throughout the monitoring period. Widely distributed on the chalk platform, the snails occurring near the lower boundary of the predominantly shingle beach, *c*. 3.3 m ACD downwards, but especially *c*. 1.9-0.7 m ACD. A sparing presence detected on groynes as high as *c*. 5.2 m ACD (MHWN = 5.1).

Kemp Town: very sparing and localized. Several noted amongst barnacles on a storm-damaged groyne, *c*. 1.3 m ACD, 24.5.82, then small numbers regularly observed on a concrete ledge adjoining the marina west breakwater root, the ledge supporting a barnacle/*Mytilus* mosaic, *c*. 3.6-3.3 m ACD (MTL = 3.5), 7.6.82-23.10.83. Only three records of single individuals subsequently: amongst barnacles, *c*. 4.4 m ACD, 14.7.84 (west face of marina west breakwater root); amongst mussels, *c*. 2.7 m ACD, 8.11.84 (west face of groyne); amongst mussels, *c*. 3.3 m ACD, 20.12.84 (ledge adjoining marina west breakwater root).

Littorina saxatilis (Olivi, 1792) [Graham, 1988: 178] Rough periwinkle (The oviparous species *L. arcana* Hannaford Ellis 1978 may well have been overlooked amongst unsampled specimens.)

Roedean: common throughout the monitoring period, January 1982-February 1985. Recorded at littoral fringe levels on groynes up to *c*. 6.8 m ACD (rarely to *c*. 7.2 m ACD (MHWS = 6.5)), normally packed into crevices in the vertical faces. To the west of the regularly monitored stretch of shore, locally spray-extended to *c*. 8.0 m ACD (and to similar levels between Ovingdean and Rottingdean), cf. *Melarhaphe neritoides*.

Adults, apparently *L. saxatilis* (unsampled), sparingly recorded at upper eulittoral levels (i.e. below the barnacle line *c*. 5.5 m ACD) down to *c*. 4.5 m ACD (MHWN = 5.1), and on one particular groyne, juveniles (assumed to be *L. saxatilis* rather than *L. arcana*) commonly recorded amongst barnacles, often in empty specimens, down to *c*. 3.6 m ACD (MTL = 3.5), mainly above *c*. 4.0 m ACD.

Kemp Town: common throughout the monitoring period. Recorded at littoral fringe levels on the groyne *c*. 100 m west of the marina west breakwater root up to *c*. 6.8 m ACD (rarely to *c*. 7.0 m ACD), normally in crevices in the vertical faces, and on the west face of the marina west breakwater root to similar heights.

Adults, apparently *L. saxatilis* (unsampled), sparingly recorded at upper eulittoral levels on the above groyne (barnacle line *c*. 5.6 m ACD) down to *c*. 5.0 m ACD, and on the west face of the marina west breakwater root (barnacle line *c*. 5.8 m ACD) down to *c*. 5.4 m ACD; a single adult apparently *L. saxatilis* (unsampled), at a lower level on the latter, viz. amongst barnacles, *c*. 4.7 m ACD, 9.9.83.

Breeding: embryos in the brood pouch in all seasons.

Melarhaphe neritoides (Linnaeus, 1758) [Graham, 1988: 168 as *Littorina neritoides*] Small periwinkle

Roedean: common throughout the monitoring period, January 1982-February 1985. Recorded at littoral fringe levels on groynes up to *c*. 7.0 m ACD (rarely to *c*. 7.5 m ACD (MHWS = 6.5), normally in crevices, concavities etc. in the vertical faces. To the west of the regularly monitored stretch of shore, locally diminished beach material (flint shingle etc.) on the eastern side of a groyne exposed the sea-wall to direct pounding by waves, resulting in the spray-extension of the Cyanophyta belt of the littoral fringe to the top of the sea-wall parapet, *c*. 9.7 m ACD, and the accompanying extension of *M. neritoides* to the top of the sea-wall where crevices were available at its junction with the base of the parapet, *c*. 9.0 m ACD (*M. neritoides* was similarly and more commonly spray-extended to the top of the sea-wall between Ovingdean and Rottingdean, at one point extending 30 cm up the seaward face of the parapet where crevices were locally available).

Small snails (shells mostly 2-3 mm high) were regularly found through the seasons in the eulittoral zone (i.e. below the barnacle line *c*. 5.5 m ACD) on groynes, variously distributed amongst barnacles down to *c*. 3.6 m ACD (MTL = 3.5), the smallest specimen being one of 1.0 mm shell height, *c*. 3.6 m ACD, 25.7.83. One record at a lower shore level still, viz. two specimens, 2.2 mm shell height, amongst barnacles on a concrete/embedded flint block (dismantled railway), *c*. 2.3 m ACD, 21.10.83.

Kemp Town: common throughout the monitoring period. Recorded at littoral fringe levels on the west face of the marina west breakwater as high as *c*. 9.3 m ACD, on the west face of the marina west breakwater root as high as *c*. 7.8 m ACD and on the groyne *c*. 100 m west of the marina west breakwater root as high as *c*. 7.0 m ACD, the different heights reflecting varying degrees of local exposure and availability of suitable crevices, pits etc. at appropriate levels. Undetected in the eulittoral zone amongst barnacles, although small snails were regularly found there at Roedean.

Family **RISSOIDAE**

Onoba semicostata (Montagu, 1803) [Graham, 1988: 256]

Roedean: found on five occasions: three on the side of a chalk cobble, the cobble coated with detrital sandy sediment, Rhodophyta belt, *c*. 0.9 m ACD, 24.1.82; one amongst *Corallina officinalis*, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 6.5.82; one amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 0.9 m ACD, 20.8.82; one amongst *C. officinalis*, Rhodophyta belt, *c*. 1.1 m ACD, 25.6.83; a shell amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.1 m ACD, 10.10.84.

Rissoa parva (da Costa, 1778) [Graham, 1988: 214] Ribbed shell form (often in company with the smooth-shelled form q.v.)

Roedean: found commonly on algae (*Cladostephus spongiosus, Gelidium pusillum, Corallina officinalis, Plocamium cartilagineum, Cystoclonium purpureum, Ceramium* sp., *Laurencia pinnatifida, Polysiphonia fucoides, Rhodomela confervoides*) and rarely on hydroids (*Dynamena pumila, Sertularia argentea*), variously distributed in the *F. serratus* (*F. vesiculosus*-*F. serratus* transition downwards), Rhodophyta and *Laminaria* belts, *c*. 2.3-0.5 m ACD, chiefly the *F. serratus*-Rhodophyta transition, *c*.

1.3 m ACD downwards: 24.1.82-26.5.83; 10.7.83-15.2.84; 1.4.84; 12.6.84-10.10.84; 8.2.85. A single specimen on the underside of a chalk cobble, *c*. 1.3 m ACD, 8.4.82.

Number per sample of alga, 1-10 or a few more, mostly 1-5, save twice amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.) collected from adjacent sampling points *c*. 0.8 m ACD: 31 (+ one smooth-shelled specimen), 31.10.82; 35 (+ three smooth-shelled specimens), 29.11.82. Number per sample of hydroid, 1-2.

Kemp Town: found 11 times only, all with samples of *Polysiphonia fucoides* (10 of the samples supporting epiphytic *Ceramium* sp.), variously collected from the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.4 m ACD: 9.1.82-25.4.82; 22.7.82; 5.10.82; 19.10.82; 30.11.82; 10.8.83; 11.9.84; 24.10.84. Number per sample, 1-3.

Rissoa parva (da Costa, 1778) [Graham, 1988: 214] Smooth-shelled form previously referred to as var. *interrupta* (often in company with the ribbed shell form q.v.)

Roedean: found commonly on algae (tube-dwelling diatoms, *Cladophora rupestris, Bryopsis* sp., *Corallina officinalis, Plocamium cartilagineum, Cystoclonium purpureum, Ceramium* sp., *Halurus flosculosus, Laurencia pinnatifida, Polysiphonia fucoides, Rhodomela confervoides*) and occasionally on hydroids (*Hartlaubella gelatinosa, Dynamena pumila, Sertularia argentea* (mainly)), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.8-0.5 m ACD, chiefly the *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, downwards: 11.1.82-29.11.82; 3.2.83-28.8.84; 8.2.85.

Number per sample of alga, 1-10 or a few more, mostly 1-5, and in hydroid samples, 1-2, save 8 and 10 + associated with two samples of *Sertularia argentea*, *c*. 0.5 m ACD, 24.4.82.

Kemp Town: found 11 times only. Nine times with samples of *Polysiphonia fucoides* (seven of the samples supporting epiphytic *Ceramium* sp.), variously collected from the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD: 9.1.82; 8.2.82; 9.4.82-23.6.82; 26.6.83; 10.8.83. Twice with *Dynamena pumila*, both samples collected from the *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 7.5.82. Number per sample of *P. fucoides*, 1-2; single specimens with *D. pumila* samples.

Rissoa parva juveniles Form indeterminate

Roedean: found commonly on algae (*Bryopsis* sp., *Gelidium pusillum, Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides, Rhodomela confervoides*) variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.8-0.5 m ACD, chiefly the *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, downwards: 11.1.82-8.4.82; 6.6.82; 22.6.82; 21.7.82; 4.9.82-26.4.83; 25.6.83-17.12.83; 30.7.84; 26.9.84; 7.11.84-8.2.85. Also found five times on *Sertularia argentea* (on the foundations and collapsed sections of a fallen-into-disrepair concrete groyne) variously distributed *c*. 1.3-0.5 m ACD: 27.2.83 (twice); 15.3.83; 16.3.83; 14.4.84.

No more than a few specimens recorded per sample of alga (extraction efficiency probably generally low), save once, when frequent snails, *c*. 0.6 mm shell height, were noted associated with *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.) collected from the Rhodophyta belt, *c*. 0.9 m ACD, 23.9.83 (in company with larger snails identifiable as ribbed shell specimens (eight) and smooth-shelled specimens (nine)). Number per sample of *Sertularia argentea*, 1-a few.

Kemp Town: found seven times only, all with *Polysiphonia fucoides* (six of the samples supporting epiphytic *Ceramium* sp.), variously collected from the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.1-0.5 m ACD: 25.1.82; 8.2.82; 26.2.82; 23.6.82; 29.3.83; 26.6.83; 19.11.83. Number per sample, 1-3.

Family **CALYPTRAEIDAE**

Crepidula fornicata (Linnaeus, 1758) [Graham, 1988: 310] American slipper limpet

Roedean: a very sparing presence on embedded flints (protruding from the chalk) and on the chalk bedrock, *c*. 1.9 m ACD (MLWN) downwards, throughout the monitoring period, January 1982-February 1985. One pair (incipient chain) on a flint cobble, *c*. 1.9 m ACD, 15.3.83, otherwise only solitary individuals detected. Shells (not specifically searched for) noted on the strand-line and/or variously distributed across the shore: 20.1.82 (frequent); 25.2.82 (occasional); 8.4.82 (occasional); 11.11.83 (here and there); 13.12.83 (quite frequent); 17.1.84 (one); 29.1.84 (frequent); 23.10.84 (several); 19.12.84 (common).

Kemp Town: not uncommon in ones and twos (incipient chains) on mussels, *c*. 1.1 m ACD downwards, throughout the monitoring period; a few noted on mussels on a storm-damaged groyne as high as *c*. 1.3 m ACD (ALTL), 7.12.84. Chains of three recorded on mussels on three occasions: one, *c*. 0.5 m ACD (MLWS = 0.6), 15.10.81; several, *c*. 1.0-0.9 m ACD, 2.4.84; quite frequent, *c*. 0.5-0.4 m ACD, 9.3.85. Shells (not specifically searched for) noted on the strand-line and/or at various levels across the shore: 9.1.82 (quite frequent); 9.4.82 (occasional); 21.11.84 (occasional).

Family **TRIVIIDAE**

Trivia arctica (Pulteney, 1799) [Lebour, 1933: 477-484; Graham, 1988: 328] Northern cowrie

Roedean: a shell amongst sandy gravel near the HW mark, 11.11.83.

Kemp Town: a live specimen, shell length 10 mm, adjacent to the landward-facing vertical of a concrete/embedded flint block (dismantled railway), *c*. 0.9 m ACD, 18.8.81; a shell in the seaward vicinity of a similar block, *Laminaria* belt, *c*. 0.8 m ACD, 23.6.82.

Ovingdean: live specimens found twice: one, 9 mm shell length, under a flint cobble, Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 16.2.84; one, 9.5 mm shell length, on the underside of a flint cobble, the ascidians *Botryllus schlosseri* and *Botrylloides leachii* on the same surface (*T. arctica* feeds upon compound ascidians), *Laminaria* belt, *c*. 0.6 m ACD (MLWS), 28.9.84.

Trivia monacha (da Costa, 1778) [Lebour, 1933: 477-484; Graham, 1988: 326] Spotted cowrie

Roedean: single shells on three occasions: amongst sandy gravel near the HW mark, 20.6.83; in a runnel, *c*. 1.3 m ACD (ALTL), 3.11.83; under a flint cobble, *c*. 0.8 m ACD, 28.9.84.

Kemp Town: live specimens found twice: one, 10 mm shell length, on a concrete/embedded flint block (dismantled railway), *c*. 1.0 m ACD, 3.7.81; one, *Laminaria* belt, *c*. 0.6 m ACD, 25.4.82. A shell, *c*. 0.6 m ACD, 17.4.84.

Family **NATICIDAE**

Euspira catena (da Costa, 1778) [Graham, 1988: 336 as *Lunatia catena*] Spotted necklace shell

Roedean: single worn shells on three occasions, variously distributed *c*. 2.0-0.6 m ACD: 28.3.82; 20.11.82; 22.12.82.

Kemp Town: worn shells (except where indicated), variously distributed *c*. 1.0-0.4 m ACD: three (including one near perfect specimen, 36 mm high), 25.4.82 (occupied by *Pagurus bernhardus*); one, 19.10.82; a fragment, 31.7.84; one, 23.7.86 (occupied by *P. bernhardus*).

Euspira nitida (Donovan, 1804) [Graham, 1988: 334 as *Lunatia alderi*] Alder's necklace shell

Roedean: single shells on three occasions, variously distributed *c*. 2.8-0.6 m ACD: 30.12.81; 21.7.82; 18.9.82 (occupied by *Pagurus bernhardus*).

Family **CERITHIIDAE** Unassigned to order

Bittium reticulatum (da Costa, 1778) [Graham, 1988: 294] Needle whelk

Roedean: shells on three occasions: two amongst gravelly sand under a chalk cobble, *F. vesiculosus* belt, *c*. 2.8 m ACD, 30.12.81; one amongst detrital sandy sediment under a flint cobble, *c*. 3.1 m ACD, 25.2.82; two amongst sand under a chalk cobble, *F. serratus* belt, *c*. 1.9 m ACD, 15.3.83.

Kemp Town: a single shell collected from a pocket of sand, *Laminaria* belt, *c*. 0.7 m ACD, 2.8.81.

Order NEOGASTROPODA

Family **MURICIDAE**

Nucella lapillus (Linnaeus, 1758) [Graham, 1988: 366] Dog whelk

Roedean: common but localized 1981, rather less common by 1984/85 (qualitative assessments only). Confined almost exclusively to artificial structures (groynes (basally), foundation blocks of dismantled railway) where it occurred on open surfaces on/near barnacles (*Semibalanus balanoides* with a sparse presence of *Austrominius modestus*), or nearby in crevices, under overhangs etc., *c*. 3.9-1.1 m ACD. To the east of the regular monitoring site, known to be present on/amongst stable barnacle-encrusted flint cobbles, *c*. 0.7 m ACD (noted as locally common there 29.4.83).

The few shell heights measured did not exceed 27 mm; snails with banded shells undetected.

Only two *N. lapillus* checks subsequent to 1985, viz. 1990 when snails had all but disappeared: a solitary specimen, *c*. 28 mm shell height, near barnacles on a landward-facing concrete vertical (dismantled railway), *c*. 2.0 m ACD, 25.5.90 (the search undertaken along the full extent of the regular monitoring site down to LW *c*. 0.6 m ACD); none at all, 21.8.90 (the search undertaken along the full stretch of shore between the marina east breakwater root (Roedean) and a point just east of Ovingdean Gap (i.e. either side of and including the regular monitoring site) down to low water *c*. 0.8 m ACD).

Kemp Town: common 1981, rather less so by 1984/85 (qualitative assessments only). Found on/amongst/near *Mytilus edulis* (storm-damaged terminal section of groyne, dismantled railway, chalk platform), *c.* 1.3 m ACD (ALTL) downwards, with a sparing presence at higher shore levels, up to *c*. 3.6 m ACD (MTL = 3.5), likewise associated with *M. edulis* (concrete ledge adjoining the marina west breakwater root, groyne).

Snails conspicuously larger than the Roedean specimens, with shell heights up to 39 mm recorded; specimens with banded shells occasional.

Only one *N. lapillus* check subsequent to 1985, viz. 22.8.90 when no specimens were found (the search undertaken along the full extent of the regular monitoring site down to LW *c*. 0.7 m ACD).

Breeding

Egg capsules, Kemp Town (chance encounters only i.e. not deliberately searched for): June, July, November 1981 (the known presence earlier in the year went unrecorded); February-April, June, December 1982; February, March 1983; none 1984; none 1985. The total lack of egg capsule records subsequent to March 1983 almost certainly reflects a true non-breeding situation due to the genital disorder 'imposex' induced in the females by tributyltin (TBT) leachate from antifouling paints polluting the ambient water. No snails sampled to verify this condition.

Egg capsules, Roedean (not deliberately searched for); none recorded; could well have been overlooked in inaccessible places.

Juvenile snails: no information gathered

N. lapillus recovered well following the ban on TBT (unfortunately it was not possible to monitor the recovery period).

Ocenebra erinaceus (Linnaeus, 1758) [Graham, 1988: 372 as *O. erinacea*] Oyster drill, Sting winkle

Roedean: shells occupied by *Pagurus bernhardus* (except where indicated empty), variously distributed *c*. 1.9-0.6 m ACD: 28.3.82 (occasional, empty); 22.9.82 (one); 4.10.82 (one); 13.11.82 (two); 20.11.82 (one); 3.2.83 (one); 28.3.83 (one); 11.6.83 (one); 8.9.83 (one); 7.10.83 (two); 21.10.83 (one). An empty shell on the strand-line, 11.11.83.

Kemp Town: single shells found twice: *c*. 1.3 m ACD, 26.2.82 (empty); *c*. 0.6 m ACD, 25.4.82 (occupied by *P. bernhardus*).

Family **BUCCINIDAE**

Buccinum undatum Linnaeus, 1758 [Graham, 1988: 400] Common whelk

Roedean: live snails undetected.

Shells noted at various levels across the shore, strand-line downwards: 25.2.82; 20.11.82; 22.12.82; 11.2,83; 7.10.83; 18.10.83; 11.11.83; 17.12.83; 29.1.84; 1.12.84. On no occasion more than a few, the single specimens 7.10.83 and 18.10.83 housing *Pagurus bernhardus*.

Kemp Town: live snails variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts and the transition between the two, *c*. 1.1-0.4 m ACD: 15.10.81 (five specimens); 10.3.82 (one); 26.3.82 (one); 25.4.82 (two); 24.5.82 (one); 5.9.82 (one); 30.11.82 (three); 29.12.82 (12); 29.3.83 (two); 15.4.83 (two); 24.9.83 (one); 17.3.84 (one); 24.10.84 (one); 9.3.85 (seven); 16.9.85 (one).

Shells at various levels across the shore, *c*. 1.1 m ACD downwards: 25.4.82; 24.5.82; 22.7.82; 19.9.82; 27.5.83; 11.7.83; 10.8.83; 15.4.84; 17.4.84; 15.5.84; 21.11.84. On no occasion more than a few, the majority housing *Pagurus bernhardus*.

Breeding

Kemp Town: three small batches of spawn attached to the sides of embedded flints protruding from the chalk bedrock, *Laminaria* belt, *c*. 0.7-0.4 m ACD, 25.4.82; two snails observed laying egg capsules on concrete/embedded flint blocks (dismantled railway), *c*. 0.9 m ACD, also a few small egg capsule clusters here and there attached to other similar similar blocks, 29.12.82 (most of these small clusters still *in situ* 17.2.83 and 17.3.83).

Detached egg capsule clusters frequently washed ashore at Roedean and Kemp Town, chiefly December-March; especially numerous at Roedean, mid-March and late December 1982, and at Kemp Town, March 1985.

Family **NASSARIIDAE**

Tritia incrassata (Strøm, 1768) [Graham, 1988: 412 as *Hinia incrassata*] Thick-lipped dog whelk

Roedean: a single live snail under a flint cobble, *c*. 0.6 m ACD (MLWS), 11.8.83. Single shells occupied by *Pagurus bernhardus* (except where indicated empty), variously distributed *c*. 2.0-0.5 m ACD: 21.7.82; 20.8.82; 15.10.82; 28.3.83; 25.7.83; 23.9.83; 21.10.83; 23.10.84 (empty). An empty shell on the strand-line, 11.11.83.

Kemp Town: live snails undetected. Single shells on two occasions: *c*. 0.8 m ACD, 2.8.81 (empty); *c*. 1.0 m ACD, 11.7.83 (housing *P. bernhardus*).

Ovingdean: a few live snails here and there under flint cobbles, *c*. 0.8-0.7 m ACD, 16.2.84.

Tritia reticulata (Linnaeus, 1758) [Graham, 1988: 408 as *Hinia reticulata*] Netted dog whelk

Roedean: live snails undetected. Shells, the majority occupied by *Pagurus bernhardus*, variously distributed *c*. 2.0 m ACD downwards: 9.3.82-23.5.82; 27.8.82-28.12.82; 3.2.83; 28.3.83; 26.5.83; 10.7.83-21.10.83; 1.12.83; 17.1.84; 1.4.84-12.6.84; 12.8.84-23.10.84; 19.12.84. No more than a few per occasion save 4.9.82, 4.10.82, 20.11.82 and 10.9.84 when frequent. A few empty shells noted by chance (i.e. not specifically searched for) in the vicinity of the strand-line, 11.11.83.

Kemp Town: a single live snail on silt-coated bedrock, *c*. 0.7 m ACD, 23.7.86 (none detected during the regular monitoring period January1982-February 1985).

Shells almost exclusively occupied by *P. bernhardus*, variously distributed *c*. 1.1 m ACD downwards: 9.4.82; 25.4.82; 22.7.82-5.9.82; 29.3.83-27.5.83; 10.8.83; 25.8.83; 17.3.84-13.6.84; 27.9.84. No more than a few per occasion save 25.4.82, 22.7.82, 5.9.82 and 17.4.84 when quite frequent.

Ovingdean: two live snails amongst stones, *Laminaria* belt, *c*. 0.6 m ACD (MLWS), 24.4.86.

Breeding

Egg capsules, probably *T. reticulata* (Ankel, 1929; Lebour, 1937: 157; Fretter & Graham, 1962: 409 (fig. 215 b), 413; Graham, 1988: 410), found on two occasions: four, *c*. 4 mm high (the largest 4.2 mm), three of them containing eggs (250-300 per capsule), the other empty, on *Polysiphonia fucoides*, *Laminaria* belt, *c*. 0.5 m ACD, 10.8.83, Kemp Town; two, *c*. 3 and 4 mm high, each containing eggs, on *Polysiphonia* sp., strand-line, 24.5.84, Roedean.

Family **MANGELIIDAE**

Bela nebula (Montagu, 1803) [Graham, 1988: 438 as *Mangelia nebula*] (Confirmed by Dr J. M. Light)

Roedean: a worn shell, 12 mm high, occupied by *Pagurus bernhardus*, *c*. 0.6 m ACD, 21.7.82.

Subclass **HETEROBRANCHIA**

Infraclass EUTHYNEURA

Superorder EUPULMONATA

Order ELLOBIIDA

Family **ELLOBIIDAE**

Myosotella myosotis (Draparnaud, 1801) [Macan,1977: 37 as *Phytia myosotis*] (Regarded mainly as an estuarine species; a specimen confirmed by Dr J. M. Light)

Roedean: single specimens on two occasions in the littoral fringe, *Melarhaphe neritoides* (q.v.) nearby: one, 7.5 mm shell height, at the entrance to a crevice in the east face of a groyne, *c*. 7.0 m ACD (MHWS = 6.5), 13.6.82; one, 7.0 mm shell height, in the angle formed by the junction between the east face of a groyne root and the south face of the sea-wall, *c*. 7.6 m ACD, 14.6.86 (the sampling point on this occasion being *c*. 300 m west of the regularly monitored stretch of shore where locally diminished beach material (shingle etc.) on the eastern side of the groyne exposed the sea-wall to direct pounding by waves, resulting in the spray-extension of the Cyanophyta belt of the littoral fringe to the top of the sea-wall parapet, *c*. 9.7 m ACD, and the accompanying extension of *M. neritoides* to the top of the sea-wall, c. 9.0 m ACD).

Superorder PYLOPULMONATA

Unassigned to order

Family **PYRAMIDELLIDAE**

Odostomia turrita Hanley, 1844 [Graham, 1988: 598] (Identified by Dr J. M. Light)

Roedean: a single specimen, 1.8 mm shell height, with a scraping of tube-dwelling diatoms and detrital sandy sediment from the chalk bedrock, *F. vesiculosus* belt, *c*. 2.8 m ACD, 25.2.82.

Odostomia sp.

Roedean: a single specimen, the last whorl missing but the animal intact (probably damaged during collection), with a scraping of *Spirobranchus lamarcki* from a flint cobble, *F. serratus* belt, *c*. 1.6 m ACD, 1.12.83.

Unassigned to superorder

Order CEPHALASPIDEA

Family **PHILINIDAE**

Philine punctata (J. Adams, 1800) [Thompson, 1988: 62] (Identified by Dr J. M. Light)

Roedean: single specimens found twice: one on *Halurus flosculosus* (supporting epiphytic *Ceramium* sp. and colonized by *Electra pilosa*), Rhodophyta belt, *c*. 1.0 m ACD, 9.3.82; one on *Corallina officinalis* (supporting epiphytic *Ceramium* sp. and colonized by *Dynamena pumila* and *E. pilosa*), *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, 6.5.82.

Kemp Town: a single specimen with *Sertularella gaudichaudi*, downward-facing surface (overhang) of a concrete/embedded flint block (dismantled railway), *c*. 0.9 m ACD, 31.7.84.

Philine sp.

Roedean: an unidentified philinid specimen, 2.5 mm in extended length, with a sample containing *Hypoglossum hypoglossoides* and *Obelia longissima* (a single hydrocaulus) scraped from a concrete vertical (groyne), *c*. 1.0 m ACD, 12.6.84.

Superorder SACOGLOSSA

Unassigned to order

Family **PLAKOBRANCHIDAE**

Elysia viridis (Montagu, 1804) [Thompson, 1988: 100]

Roedean: found quite frequently May-December 1984, only a few records previously. Occurred on algae (Ectocarpales indet., *Cladophora rupestris, C. sericea, Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides, Rhodomela confervoides*), variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.9-0.6 m ACD, chiefly below the *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL): 13.12.82; 8.9.83-1.12.83; 31.5.84; 28.8.84-19.12.84.

Number per sample of alga only three times exceeded a few, viz. moderate numbers of juveniles amongst *Ceramium* sp., *c*. 0.9 m ACD, and diatom-coated *Cladophora sericea*, *c*. 0.6 m ACD (MLWS), 28.8.84,

and amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *c*. 1.2 m ACD, 26.9.84. Specimens were always small, save one, *c*. 25 mm long, on Ectocarpales indet., *c*. 1.0 m ACD, 31.5.84 (the only specimen found on that occasion).

Also recorded unassociated with algae on three occasions in 1984: frequent, including specimens *c*. 45 mm long, on detrital sandy sediment coating the chalk bedrock, in an area where thinly scattered tufts of *P. fucoides* comprised the most conspicuous algal cover, *c*. 1.0-0.7 m ACD, 17.5.84 (an early morning observation, LW 0.7 m ACD); one, *c*. 20 mm long, in a sandy pool, *c*. 1.2 m ACD, 12.6.84; one, *c*. 16 mm long, in a small hollow in a vertical rock face, *c*. 1.1 m ACD, 30.7.84.

Kemp Town: a single small specimen on *Chondrus crispus*, *Laminaria* belt, *c*. 0.5 m ACD, 27.9.84.

Family **HERMAEIDAE**

Hermaea bifida (Montagu, 1816) [Thompson, 1988: 94 as *H. (Hermaea) bifida*]

Roedean: one, *c*. 7 mm long, on *Halurus flosculosus*, Rhodophyta belt, *c*. 0.9 m ACD, 20.8.82. Three, *c*. 2-3 mm long, on *H. flosculosus*, Rhodophyta belt, *c*. 1.0 m ACD, 15.10.82.

Kemp Town: one, *c*. 5 mm long, on *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 29.9.81.

Superorder NUDIPLEURA

Order NUDIBRANCHIA

Family **DOTIDAE**

Doto coronata (Gmelin, 1791) [Thompson, 1988: 130]

Roedean: found on *Sertularia argentea* on the same fallen-into-disrepair concrete groyne (basally), *c*. 0.6 m ACD (MLWS), on three occasions: a small specimen, *c*. 4 mm long, 14.10.81; six specimens, four of them gravid (spawn coils, presumably *D. coronata*, also on the hydroid), 24.4.82; a small specimen, *c*. 4-5 mm long, 28.8.84.

Kemp Town: one gravid specimen, *c*. 11 mm long, on *S. argentea* (spawn coils, presumably *D. coronata*, also on the hydroid), downward-facing surface (overhang) of a concrete/embedded flint block (dismantled railway), *c*. 0.9 m ACD, 29.12.82.

Family **ONCHIDORIDIDAE**

Onchidoris bilamellata (Linnaeus, 1767) [Thompson, 1988: 178] (Confirmed by Dr B. E. Picton)

Roedean: a single white individual, *c*. 10 mm long, on the underside of a flint cobble, the cobble encrusted with barnacles (*Semibalanus balanoides*), *c*. 0.6 m ACD (MLWS), 28.9.84.

Kemp Town: single specimens found twice: one *c*. 3 mm long, amongst barnacles (*S. balanoides*) on a concrete vertical (storm-damaged terminal section of groyne), *c*. 1.2 m ACD, 14.7.84; one, *c*. 18 mm long, next to barnacles (*S. balanoides* with occasional *Austrominius modestus*) encrusting steel piling (west face of marina west breakwater root), *c*. 1.6 m ACD, 11.1.85.

Family **POLYCERIDAE**

Polycera quadrilineata (Müller, 1776) [Thompson, 1988: 204] (A sketch of a specimen agreed by Dr J. M. Light)

Roedean: single specimens, none exceeding *c*. 7 mm in extended length, on five occasions: on *Polysiphonia fucoides, F.serratus* belt, *c*. 1.9 m ACD (MLWN), 8.9.83; on *Mastocarpus stellatus* (colonized by *Electra pilosa*), Rhodophyta belt, *c*. 1.0 m ACD, 23.9.83; on *P. fucoides, F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 18.11.83; on *P. fucoides* (supporting epiphytic *Ceramium* sp. and colonized by *E. pilosa*), Rhodophyta belt, *c*. 1.1 m ACD, 30.7.84, and *c*. 1.0 m ACD, 23.10.84.

Three of the five specimens, viz. those collected 23.9.83, 18.11.83 and 23.10.84, with longitudinal black streaks on the body.

Kemp Town: one, *c*. 3 mm long, on *P. fucoides* (supporting epiphytic *Ceramium* sp. and colonized by *E. pilosa*), *Laminaria* belt, *c*. 0.5 m ACD, 10.8.83.

Family **DORIDIDAE**

Doris pseudoargus Rapp, 1827 [Thompson, 1988: 226 as *Archidoris pseudoargus*] Sea lemon

Roedean: one, *c*. 70 mm long, under a rock overhang, *F. serratus* belt, *c*. 1.6 m ACD, 10.9.84.

Kemp Town: one, *c*. 55 mm long, floating upside-down in a pool, probably dislodged from a nearby concrete/embedded flint block (dismantled railway), the block supporting *Halichondria panicea*, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 25.4.82.

Family **AEOLIDIIDAE**

Aeolidia papillosa (Linnaeus, 1761) [Thompson, 1988: 332] Grey sea slug

Kemp Town: found on six occasions: three, *c*. 50 mm long, under individual flint cobbles, *Mytilus/Palmaria-Laminaria* transition, *c.* 1.0 m ACD, 26.3.82; frequent, *c*. 1.0-0.4 m ACD, 25.4.82; three, *c*. 50-55 mm long, on the undersides of individual flint cobbles, *c*. 0.6-0.5 m ACD, 17.2.84; quite frequent specimens, one laying spawn, and spawn coils here and there attached to flints (embedded and protruding from the bedrock) and mussels, *c*. 1.0-0.4 m ACD, 17.4.84; one under a flint cobble, *c*. 0.8 m ACD, 15.5.84; one, *c*. 55-60 mm long, on sand in a channel, *c*. 0.7 m ACD, 11.3.85.

Class **BIVALVIA**

Subclass **AUTOBRANCHIA**

Infraclass PTERIOMORPHIA

Order MYTILIDA

Family **MYTILIDAE**

Mytilus edulis Linnaeus, 1758 [Tebble, 1976: 40] Common or Blue mussel

Roedean: a sparing presence throughout the monitoring period, January 1982-February 1985. Occurred here and there on groynes, variously distributed in cracks and crevices etc. as single, several or small isolated clusters of specimens, up to 10 or a few more per cluster (adjacent concrete/protruding flint surfaces usually encrusted with barnacles), *c*. 5.1-3.3 m ACD, restriction to groynes at these higher shore levels due to the beach overlying the chalk platform down to *c*. 3.3 m ACD. On the chalk platform, mussels occurred in similar numbers and small clusters, sparsely distributed in the more open, mainly barnacle-supporting areas, in the *F. vesiculosus* belt, *c*. 3.2-2.7 m ACD.

To the east and west of the regular monitoring site, mussels were rather more common, distributed over a similar vertical range, but never forming more than a local scattering of patches, the largest single recorded patch measuring *c*. 100 x 30 cm which occurred on the chalk platform, *c*. 3.2 m ACD.

Specimens on groynes were not found exceeding 20-30 mm in length, the larger specimens occurring at the lower shore levels; chalk platform specimens commonly attained lengths of 30-40 mm.

Kemp Town: dominated the lower eulittoral throughout the monitoring period between the upper eulittoral belt of barnacles (*Semibalanus balanoides*, sparse *Austrominius modestus*) and the upper sublittoral belt of *Laminaria saccharina*, *c*. 3.3-1.0 m ACD. The beach overlying the chalk platform down to *c*. 1.3 m ACD restricted the mussels to artificial structures (groyne, west face of marina west breakwater root/adjoining ledge) at higher shore levels, with small local clusters variously distributed in angles, cracks and crevices etc. extending into the barnacle belt, *c*. 3.3-5.3 m ACD (MHWN = 5.1), diminishing in number the higher the level. At lower shore levels (storm-damaged terminal section of groyne, chalk platform), *c*. 1.3-1.0 m ACD, the mussels supported *Palmaria palmata* forming a distinctive *Mytilus/Palmaria* belt. *M. edulis* extended further downshore, mainly as quite large patches, into the *Laminaria* belt.

The length of specimens extending locally into the barnacle belt rarely exceeded *c*. 15 mm. Those at *c*. 3.3 m ACD (upper limit of *M. edulis* in quantity) achieved maximum recorded lengths of *c*. 50 mm (seaward end of concrete ledge adjoining west face of marina west breakwater root). Specimens *c*. 1.3 m ACD downwards (storm-damaged terminal section of groyne, foundation blocks of dismantled railway, chalk platform) commonly attained lengths of 55-65 mm, with individuals up to 75 mm not infrequent.

Breeding: the known presence of spat on filamentous algae (e.g. *Ceramium* sp., *Polysiphonia fucoides*) and hydroids (e.g. *Sertularia argentea*) in all seasons at both Roedean and Kemp Town was inadequately monitored, however, observations suggested a period of maximum settlement June/July 1983 and 1984.

Order OSTREIDA

Family **OSTREIDAE**

Ostrea edulis Linnaeus, 1758 [Tebble, 1976: 53] Common European, Flat or Native oyster

Roedean: loose valves variously distributed, *c*. 3.3-0.4 m ACD (strand-line exception indicated): 28.3.82 (occasional); 8.4.82 (occasional); 28.3.83 (here and there); 11.6.83 (here and there); 7.10.83 (one); 1.12.83 (a few); 17.12.83 (one); 7.1.84 (one, strand-line); 29.3.84 (one); 1.5.84 (one); 19.12.84 (here and there).

Kemp Town: loose valves variously distributed, *c*. 1.2-0.5 m ACD: 17.2.83 (occasional); 29.3.83 (occasional); 17.3.84 (one); 17.4.84 (one).

Order PECTINIDA

Family **PECTINIDAE**

Mimachlamys varia (Linnaeus, 1758) [Tebble, 1976: 59 as *Chlamys (Chlamys) varia*] Variegated scallop

Roedean: a single valve, *c*. 1.2 m ACD, 19.12.84.

Kemp Town: valves variously distributed, *c*. 1.1-0.8 m ACD: 30.11.82 (several); 29.12.82 (one); 28.2.83 (one).

Pecten maximus (Linnaeus, 1758) [Tebble, 1976: 57] Great scallop or Escallop

Kemp Town: a single valve, *c*. 1.0 m ACD, 24.5.82.

Family **ANOMIIDAE**

Genus and species uncertain

Kemp Town: a live juvenile, the left (upper) valve measuring 6.5 mm from the hinge-line to the opposite margin, attached to the side of a flint cobble, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 9.4.82.

Infraclass HETEROCONCHIA

Order GALEOMMATIDA

Family **LASAEIDAE**

Lasaea rubra (Montagu, 1803) [Tebble, 1976: 84]

Roedean: a moderate presence detected amongst barnacles on groynes, *c*. 4.3-3.1 m ACD (MTL = 3.5), October 1982-March 1985 (probably present throughout 1982 but overlooked due to inadequate sampling).

Kemp Town: a moderate presence amongst barnacles on the groyne *c*. 100 m west of the marina west breakwater root, *c*. 4.1 -3.3 m ACD, especially the higher levels, November 1982-January 1985 (barnacles unsampled either side of this period). One record at a higher shore level, viz. a single specimen amongst barnacles encrusting steel piling (west face of marina west breakwater root), *c*. 5.4 m ACD (MHWN = 5.1), 14.7.84.

Order CARDIIDA

Family **CARDIIDAE**

Acanthocardia echinata (Linnaeus, 1758) [Tebble, 1976: 99] Prickly cockle

Roedean: valves frequently found, variously distributed on the strand-line and across the shore: 9.3.82; 23.5.82; 20.8.82; 25.11.82-28.3.83; 11.6.83; 25.7.83; 8.9.83-29.3.84; 29.6.84; 28.9.84; 6.12.84. One-several per occasion.

Kemp Town: one small left valve, 15 mm in length, *c*. 0.5 m ACD, 9.3.85.

Cerastoderma edule (Linnaeus, 1758) [Tebble, 1976: 104] Common edible cockle

Roedean: single valves on three occasions, variously distributed, *c*. 1.3-0.6 m ACD: 7.2.82; 28.3.82; 17.12.83.

Order VENERIDA

Family **MACTRIDAE**

Mactra stultorum (Linnaeus, 1758) [Tebble, 1976: 129 as *M. corallina*] Rayed trough shell

Kemp Town: two fresh dead specimens, the soft parts intact, stranded on a narrow strip of sand interposed between the lower boundary of the shingle beach and the *Mytilus*-covered rocks to seaward, *c*. 1.2 m ACD, 21.11.84.

Valves variously distributed, *c*. 1.3-0.4 m ACD: 8.2.82; 26.3.82; 9.4.82; 24.5.82; 19.10.82; 1.11.82; 12.2.83; 28.2.83; 15.4.83; 27.5.83; 4.11.83 (a pair); 21.11.84 (a pair); 9.3.85. One-several per occasion, save 8.2.82 and 26.3.82 when quite frequent.

Family **VENERIDAE**

Venerupis corrugata (Gmelin, 1791) [Tebble, 1976: 123 as *V. saxatilis* (Fleuriau de Bellevue)]

Roedean: a sparing presence of live animals and rather more frequent empty shells (paired valves) in old piddock burrows in the chalk bedrock, *c*. 1.9 m ACD (MLWN) downwards, throughout the monitoring period, January 1982-February 1985. Paired and single valves, scattered here and there on the rocks, could fairly readily be found on most occasions.

Kemp Town: a sparing presence of live animals and frequent empty shells (paired valves) in old piddock burrows in the chalk bedrock, *c*. 1.1 m ACD downwards, throughout the monitoring period, January 1982-February 1985. Paired and single valves, scattered here and there on the rocks, could readily be found on most occasions.

Order ADAPEDONTA

Family **SOLENIDAE**

Solen marginatus Pulteney, 1799 [Tebble, 1976: 164] Grooved razor shell

Kemp Town: a single valve, *c*. 1.0 m ACD, 27.5.83; a pair of valves (anterior fragment of each valve only), *c*. 1.1 m ACD, 17.3.84; two pairs of valves, *c*. 1.0-0.9 m ACD, 25.4.86; one pair of valves, *c*. 1.2 m ACD, 23.7.86. The 1986 records subsequent to the regular monitoring period.

Family **PHARIDAE**

Ensis ensis (Linnaeus, 1758) [Tebble, 1976: 161] Common razor shell

Roedean: a single valve fragment, *c*. 1.0 m ACD, 27.10.81.

Kemp Town: valves (paired and single) frequently recorded, variously distributed *c*. 1.3-0.4 m ACD: 9.1.82; 10.3.82-24.5.82; 5.10.82-29.12.82; 17.2.83-27.4.83; 8.10.83; 17.4.84; 15.5.84; 27.9.84; 20.12.84; 9.3.85. One-several per occasion, save 26.3.82 and 5.10.82 when moderate numbers were found.

Ensis siliqua (Linnaeus, 1758) [Tebble, 1976: 163] Pod razor shell

Roedean: a pair of valves, 110 mm long, together with algal debris, swept up onto the top of the marina east breakwater, about three quarters of the way towards its end, during recent heavy seas, 6.10.86 (subsequent to the regular monitoring period).

Order MYIDA

Family **PHOLADIDAE**

Barnea candida (Linnaeus, 1758) [Tebble, 1976: 180] White piddock

Roedean: a pair of valves, 43 mm long, *in situ* in a burrow in the chalk bedrock, *c*. 2.3 m ACD, 25.5.90 (subsequent to the regular monitoring period).

Pholas dactylus Linnaeus, 1758 [Tebble, 1976: 179] Common piddock

Roedean: live specimens not uncommon, *c.* 1.3 m ACD (ALTL) downwards, throughout the monitoring period, January 1982-February 1985.

Old piddock burrows in the chalk bedrock (and chalk cobbles etc.) were a conspicuous feature of the shore. From a very sparse scattering as high as *c*. 3.0 m ACD (lower boundary of beach *c*. 3.3 m ACD), the density of burrows progressively increased downshore, with particularly extensive riddling of the bedrock occurring below *c*. 1.3 m ACD (ALTL), the great majority presumably attributable to *P. dactylus* as evidenced by the scattered though fairly plentiful presence of *in situ* empty shells (paired valves). Loose valves could readily be found here and there on most occasions.

Kemp Town: live specimens not uncommon *c*. 1.0 m ACD downwards throughout the monitoring period, January 1982-February 1985.

Old piddock burrows extensively riddled the chalk bedrock *c*. 1.2 m ACD downwards (lower boundary of beach *c*. 1.3 m ACD). Scattered valves not infrequently found.

Class **CEPHALOPODA**

Subclass **COLEOIDEA**

Superorder DECAPODIFORMES

Order SEPIIDA

Family **SEPIIDAE**

Sepia officinalis Linnaeus, 1758 [Jaeckel, 1958: 568, 672 (eggs); Muus, 1963a, reprinted 1985 in Conchologist's Newsl. 92: 239-240] Common cuttlefish

Dead adult specimens found washed ashore (fresh dead, exceptions indicated):

Roedean-Ovingdean: 39, during a period of fresh-strong SSW'ly winds, 23.6.84 (mill-pond conditions prevailing for a week or so prior to 21.6.84); *c*. 180, 15.6.85.

Kemp Town: single specimens (well-decayed), 24.5.82, 12.6.83 and 20.6.84; *c*. 60, 23.6.84; c. 110, all on a 100 m stretch of beach westward from the marina west breakwater root, 15.6.85; one (well-decayed), 23.7.86.

Intertidally-attached egg cluster:

Roedean: a single cluster attached to the stipe of a *F. serratus* thallus, *c*. 30-40 m east of the marina east breakwater root, *c*. 2.3 m ACD (MLWN = 1.9), 22.6.86.

Detached egg clusters found washed ashore:

Roedean-Ovingdean: 30.7.84 (one, Roedean); 15.6.85 (here and there, Roedean-Ovingdean); 20.7.85 (one, Ovingdean); 5.8.86 (frequent, Ovingdean).

Kemp Town: 14.7.84 (quite frequent); 15.6.85 (here and there); 8.6.86 (one); 13.6.86 (one); 21.6.86 (a few); 23.7.86 (occasional); 4.8.86 (common); 14.8.86 (one).

Note. The known occurrence of stranded egg clusters at Kemp Town, Roedean and Ovingdean prior to 1984 went unrecorded.

Shells (cuttlebones) on the strand-line (one-a few per occasion, exceptions indicated):

Roedean-Ovingdean: 6.1.82; 16.3.82 (frequent, Roedean); 26.6.82-20.8.82; 31.10.82; 12.11.82; 25.11.82 (frequent, Roedean); 18.7.83 (frequent, Roedean); 2.8.83-7.10.83; 13.12.83; 10.3.84; 24.5.84-6.7.84; 12.7.84 (quite frequent, Roedean); 26.7.84-15.11.84; 29.11.84 (quite frequent, Roedean); 7.4.85-2.6.85; 29.6.85 (common); 20.7.85; 31.8.85; 24.5.86 (common).

Kemp Town: 13.1.83; 12.6.83; 1.1.84; 14.7.84 (frequent); 21.11.84; 1.12.86.

Family **SEPIOLIDAE**

Sepiola atlantica d'Orbigny, 1842 [Jaeckel, 1958: 575; Muus, 1963a, reprinted 1985 in Conchologist's Newsl. 92: 240-242] Little cuttlefish

Roedean: one, 20 mm ventral mantle length, sandy-bottomed pool, *c*. 1.3 m ACD (ALTL), 29.6.84.

Order MYOPSIDA

Family **LOLIGINIDAE**

Alloteuthis subulata (Lamarck, 1798) [Jaeckel, 1958: 584; Muus, 1963b, reprinted 1985 in Conchologist's Newsl. 92: 243-244] (Confirmed by Dr C. P. Palmer)

Roedean: five in a sandy-bottomed pool, *c*. 1.9 m ACD (MLWN), 29.4.83, the specimen captured measuring 81 mm ventral mantle length (the others appearing to be much the same size). A similar-sized uncaptured individual, probably *A. subulata*, in a pool (sandy bottom with some cobbles), *c*. 1.9 m ACD, 25.6.83.

Phylum **BRYOZOA**

Note. Members of this phylum were monitored March 1981-February 1985 at Roedean and May 1981-February 1985 at Kemp Town.

Class **STENOLAEMATA**

Order CYCLOSTOMATIDA

Family **CRISIIDAE**

Crisia aculeata Hassall, 1841 [Hayward & Ryland, 1985: 50]

Roedean: found on strand-line material: *Laminaria hyperborea* holdfasts, 30.11.81 and 15.12.81; *Cryptopleura* ramosa (on frond), 6.1.82; *Phyllophora pseudoceranoides* (on stipe and frond), 20.11.82; *Flustra foliacea*, 22.12.82.

Kemp Town: on stranded *F. foliacea*, 25.1.82.

Family **TUBULIPORIDAE**

Tubulipora sp.

Roedean: two small colonies on *Phyllophora pseudoceranoides* (basal portion of frond), strand-line, 20.11.82 (*Crisia aculeata* on stipe and frond of same thallus).

Class **GYMNOLAEMATA**

Order CTENOSTOMATIDA

Family **ALCYONIDIIDAE**

Alcyonidium diaphanum (Hudson, 1762) [Hayward, 1985: 44]

Roedean: stranded colonies and/or fragments, no more than a few specimens per occasion (mostly fragments): 2.11.81 (a much branched colony, *c*. 180 mm high, the largest specimen recorded); 30.11.81; 16.3.82; 15.10.82; 22.12.82; 11.2.83; 29.10.84.

Kemp Town: a stranded fragment, 29.12.82.

Ovingdean: frequent colonies, up to *c*. 180 mm high, strand-line, 24.12.87.

Alcyonidium hirsutum (Fleming, 1828) [Hayward, 1985: 55]

Kemp Town: found on algae (*Fucus serratus, Palmaria palmata* (a single colony), *Chondrus crispus*), variously distributed in the *Mytilus/Palmaria* belt and the *Mytilus/Palmaria-Laminaria* transition, *c*. 1.2-1.0 m ACD, no more than a few colonies per occasion: 3.6.81; 19.6.81; 3.7.81; 18.8.81; 9.4.82; 29.12.82; 2.12.83. A single colony on *Mytilus edulis*, *c*. 1.0 m ACD, 24.10.84.

Breeding: embryos 29.12.82, 2.12.83.

Alcyonidium mytili Dalyell, 1848 [Hayward, 1985: 60]

Roedean: found sparingly on the chalk bedrock (vertical and overhanging surfaces, sheltered hollows) and on the undersides of chalk cobbles, variously distributed in the *F. serratus* and Rhodophyta belts, *c*. 1.9-0.9 m ACD: 18.5.81-29.8.81; 30.7.84-10.9.84.

Kemp Town: one colony on the underside of a flint cobble, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 18.8.81.

Family **FLUSTRELLIDRIDAE**

Flustrellidra hispida (Fabricius, 1780) [Hayward, 1985: 70]

Roedean: found on five occasions on *Fucus serratus* variously distributed in the *F. serratus* and Rhodophyta belts, *c*. 1.9-1.0 m ACD, no more than a few colonies per occasion: 18.6.81; 11.6.83; 16.3.84; 1.5.84; 10.10.84.

Kemp Town: found on *F. serratus* (scattered clumps of thalli confined mainly to artificial structures (storm-damaged terminal section of groyne, foundation blocks of dismantled railway)), *c*. 1.3-1.1 m ACD, throughout the monitoring period.

Family **WALKERIIDAE**

Walkeria uva (Linnaeus, 1758) [Hayward, 1985: 108]

Roedean: found on four occasions: on *Cladophora rupestris*, Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 9.3.82, and on *Corallina officinalis* in small pools in depressions on the tops of concrete/embedded flint blocks (dismantled railway), *c*. 2.3 m ACD, 1.12.83, 10.9.84 and 7.11.84.

Family **VESICULARIIDAE**

Amathia lendigera (Linnaeus, 1761) [Hayward, 1985: 134]

Roedean: a single intertidal record, viz. a small colony, *c*. 17 mm maximum dimension, on *Sertularia argentea* (basal portion of stem), downward-facing surface of a concrete overhang (groyne), *c*. 0.7 m ACD (MLWS = 0.6), 28.8.84.

Colonies on drift material: *Flustra foliacea*, 20.11.82; *Halidrys siliquosa*, 29.11.82; *Hydrallmania falcata* and *F. foliacea*, 11.11.83; *H. falcata*, 25.1.84; *F. foliacea*, 23.10.84.

A fragment caught up in a tangled mass of material including *Calliblepharis ciliata, Abietinaria abietina, Hydrallmania falcata, Sertularia argentea* and *Nemertesia ramosa*, strand-line, 22.2.82. Fragments trapped amongst intertidally-attached algae (*Gelidium pusillum, Corallina officinalis, Ceramium* sp., *Laurencia pinnatifida, Polysiphonia fucoides, Rhodomela confervoides*) variously distributed *c*. 2.3-0.8 m ACD: 6.5.82; 13.11.82; 29.11.82; 28.12.82; 3.2.83; 11.2.83; 23.9.83-15.2.84; 1.4.84; 23.10.84; 6.12.84; 12.1.85; 18.1.85.

(The known presence of detached fragments and colonies on drift material 1981 went unrecorded).

Kemp Town: a small colony on the carapace of a male *Pisa tetraodon* (q.v.), *c*. 1.3 m ACD (ALTL), 20.12.84.

A colony on a *Laminaria saccharina* holdfast, strand-line, 17.1.82. Fragments trapped amongst intertidally-attached *Polysiphonia fucoides* variously distributed *c*. 1.1-0.6 m ACD: 7.6.82; 19.10.82; 15.4.83.

Amathia citrina (Hincks, 1877) [Hayward, 1985: 142 as *Bowerbankia citrina*]

Note. According to Hayward (1985), *B. citrina* had been collected with certainty from very few localities: Devon (Hincks 1880), Roscoff (Prenant & Bobin 1956), and in recent years (prior to 1985), Swanage, Lundy, Swansea and Tenby.

Roedean: found twice, both times on the downward-facing surface of a concrete overhang (the same fallen-into-disrepair groyne): a thriving colony (the bright yellow polypides actively expanding and

retracting their tentacle crowns under the microscope), *c*. 40 mm high, *c*. 1.3 m ACD (ALTL), 28.8.84; a degenerating colony, *c*. 10 mm high, *c*. 1.0 m ACD, 26.9.84.

That section of the groyne from which the specimens had been collected had been buried under flint cobbles, and unavailable for settlement by organisms, since commencement of monitoring March 1981 (and for an unknown period previously) until January 1984 when storms shifted the cobbles upshore.

Amathia gracilis (Leidy, 1855) [Hayward, 1985: 144 as *Bowerbankia gracilis*]

Roedean: found on various substrata (*Corallina officinalis, Polysiphonia fucoides, Laomedea flexuosa, Dynamena pumila*, chalk bedrock) variously distributed in the *F. vesiculosus, F. serratus* and Rhodophyta belts, *c*. 2.6-0.8 m ACD: 29.8.81; 6.5.82; 6.7.82; 26.5.83; 25.6.83; 10.7.83; 25.7.83; 6.10.84.

Amathia imbricata (Adams, 1798) [Hayward, 1985: 139 as *Bowerbankia imbricata*]

Roedean: adnate colonies on various substrata (*Fucus serratus, Corallina officinalis, Sertularia argentea*, chalk bedrock) variously distributed *c*. 2.3-1.0 m ACD: 30.4.81; 15.6.81; 13.12.82; 23.9.83; 1.12.83; 7.11.84.

Vesicularia spinosa (Linnaeus, 1767) [Hayward, 1985: 130]

Roedean: a fragment, *c*. 30 mm long, strand-line, 6.1.82.

Order CHEILOSTOMATIDA

Family **ELECTRIDAE**

Electra pilosa (Linnaeus, 1767) [Hayward & Ryland, 1998 Part 1: 128]

Roedean: extremely common. Found mainly on algae (*Cladostephus spongiosus, Laminaria saccharina, Fucus serratus, Cladophora rupestris, Corallina officinalis, Mastocarpus stellatus, Chondrus crispus, Plocamium cartilagineum, Ceramium* sp., *Halurus flosculosus, Laurencia pinnatifida, Polysiphonia fucoides* (especially), *Rhodomela confervoides*) and rarely on other substrata (*Sertularia argentea*, the chalk bedrock), *c*. 1.9 m ACD (*F. serratus* belt) downwards, increasingly widespread the lower the shore level. A single record at a higher shore level, viz. on *Chondrus crispus* (a small thallus) on a landward-facing concrete vertical (dismantled railway), *c*. 2.1 m ACD, 10.9.84.

Recorded on strand-line material: *F. serratus, Palmaria palmata* and *Calliblepharis ciliata*, 27.11.81; *F. serratus*, 9.12.81; *Laminaria digitata, L. hyperborea and L. saccharina*, 15.12.81; *Sertularia argentea*, 6.1.82; *Hydrallmania falcata*, 22.2.82; *L. hyperborea, Phyllophora pseudoceranoides* and *Chondrus crispus*, 20.11.82; *L. hyperborea, Palmaria palmata* and *P. pseudoceranoides*, 22.12.82; *Hydrallmania falcata*, 25.1.84.

Kemp Town: common. Found on algae (*Laminaria saccharina, F. serratus, Palmaria palmata, Gracilaria verrucosa, Chondrus crispus, Ceramium* sp., *Polysiphonia fucoides*) *c*. 1.3 m ACD (storm-damaged terminal section of groyne) downwards.

A colony on the dactylus of the right cheliped of a male *Pisa tetraodon* (q.v.), *c*. 1.3 m ACD, 20.12.84.

Recorded on strand-line algae: *Palmaria palmata*, 25.11.81; *Laminaria hyperborea, F. serratus* and *P. palmata*, 25.1.82.

Family **MEMBRANIPORIDAE**

Membranipora membranacea (Linnaeus, 1767) [Hayward & Ryland, 1998 Part 1: 116]

Roedean: a sparing presence detected on *Laminaria saccharina* fronds, *c*. 0.6 m ACD (MLWS): 11.8.83; 28.8.84; 28.9.84. One record at a higher shore level, viz. a single colony on a *L. saccharina* frond, *c*. 1.1 m ACD, 12.8.84.

Recorded on fronds of stranded *Laminaria* spp.: *L. hyperborea*, 16.11.81; *L. saccharina*, 9.12.81, 15.12.81; *L. digitata*, 6.1.82; *L. saccharina*, 22.6.82, 4.10.82; *L. hyperborea*, 20.11.82, 22.12.82; *L. saccharina*, 23.9.83; *L. digitata*, 7.1.84, 17.5.84, 24.5.84; *L. saccharina*, 12.8.84.

Kemp Town: colonies fairly widespread on *L. saccharina* fronds, *c*. 1.0 m ACD downwards: 10.8.83-8.10.83; 29.8.84-27.9.84.

Recorded on the fronds of stranded *Laminaria* spp.: *L. saccharina*, 22.2.81; *L. hyperborea*, 25.1.82; *L. saccharina*, 3.8.83.

Family **CALLOPORIDAE**

Amphiblestrum auritum (Hincks, 1877) [Hayward & Ryland, 1998 Part 1: 188]

Roedean: one colony (with *Alcyonidium mytili* and *Schizomavella linearis*) on the underside of a chalk cobble, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 12.8.84.

Callopora lineata (Linnaeus, 1767) [Hayward & Ryland, 1998 Part 1: 158]

Roedean: colonies on stranded *Laminaria* spp. holdfasts: *L. saccharina*, 8.12.81; *L. digitata, L. hyperborea* and *L. saccharina*, 15.12.81.

Kemp Town: colonies on stranded *Laminaria* spp. holdfasts: *L. saccharina*, 17.1.82; *L. hyperborea*, 25.1.82.

Family **FLUSTRIDAE**

Chartella papyracea (Ellis & Solander, 1786) [Hayward & Ryland, 1998 Part 1: 146]

Kemp Town: unrecorded during the regular monitoring period but found by chance on one earlier occasion, viz. a single colony, 35 mm high, strand-line, 22.2.81.

Flustra foliacea (Linnaeus, 1758) [Hayward & Ryland, 1998 Part 1: 141] Hornwrack

Roedean: stranded colonies and/or fragments, no more than a few specimens per occasion (except where indicated): 30.5.81; 14.10.81; 2.11.81 (common); 30.11.81; 6.1.82-16.3.82; 20.11.82 (frequent); 22.12.82 (common); 11.2.83 (common); 23.9.83-18.11.83; 13.12.83 (frequent); 28.12.83; 7.1.84; 25.1.84 (frequent); 31.1.84 (frequent); 15.2.84; 2.3.84; 31.5.84; 4.10.84; 23.10.84; 6.12.84; 26.1.85 (common).

Kemp Town: stranded colonies and/or fragments, no more than a few specimens per occasion (exceptions indicated): 22.2.81 (common); 29.10.81 (frequent); 26.12.81; 25.1.82; 10.3.82; 24.5.82; 5.10.82; 14.11.82; 30.11.82; 17.4.84; 21.11.84; 24.1.85; 9.2.85.

Family **BUGULIDAE**

Bugulina turbinata (Alder, 1857) [Hayward & Ryland, 1998 Part 1: 230 as *Bugula turbinata*]

Roedean: several colonies on the undersides of flint cobbles, *c*. 1.1 m ACD, 6.6.82 and 20.8.82; single colonies on overhanging surfaces, *c*. 1.3 m ACD (chalk bedrock) and *c*. 0.8 m ACD (base of concrete groyne), 28.8.84.

Crisularia plumosa (Pallas, 1766) [Hayward & Ryland, 1998 Part 1: 222 as *Bugula plumosa*]

Roedean: one colony (with *Bugulina turbinata*) on the underside of a flint cobble, *c*. 1.1 m ACD, 6.6.82.

Family **CANDIDAE**

Cradoscrupocellaria reptans (Linnaeus, 1758) [Hayward & Ryland, 1998 Part 1: 270 as *Scrupocellaria reptans*]

Roedean: found on strand-line algae: *Cryptopleura ramosa*, 6.1.82; *Cystoseira* sp., 29.11.84.

Scrupocellaria scruposa (Linnaeus, 1758) [Hayward & Ryland, 1998 Part 1: 276]

Roedean: found on strand-line material: *Flustra foliacea*, 20.11.82; *Sertularia argentea*, 6.12.84.

Kemp Town: found on strand-line material: *Laminaria saccharina* holdfast, 17.1.82; *F. foliacea*, 14.11.82.

Family **HIPPOTHOIDAE**

Celleporella hyalina (Linnaeus, 1767) [Hayward & Ryland, 1999 Part 2: 94]

Roedean: not uncommon and recorded in all seasons throughout the monitoring period. Found on algae (*Cladophora rupestris, Corallina officinalis, Halurus flosculosus, Polysiphonia fucoides, Rhodomela confervoides*) variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c.* 1.9-0.5 m ACD. A single record on a non-algal substrate, viz. *Sertularia argentea* (base of stem), *c*. 0.6 m ACD (MLWS), 9.3.82.

Kemp Town: one colony on a *Laminaria hyperborea* holdfast, strand-line, 25.1.82, otherwise undetected.

Family **ROMANCHEINIDAE**

Escharoides coccinea (Abildgaard, 1806) [Hayward & Ryland, 1999 Part 2: 114]

Roedean: colonies on *Laminaria hyperborea* holdfasts, strand-line, 30.11.81 and 15.12.81.

Escharella variolosa (Johnston, 1838) [Hayward & Ryland, 1999 Part 2: 132]

Kemp Town: a small colony, *c*. 4 mm maximum diameter, on a *Laminaria hyperborea* holdfast, strand-line, 25.11.81.

Family **BITECTIPORIDAE**

Schizomavella (Schizomavella) linearis (Hassall, 1841) [Hayward & Ryland, 1999 Part 2: 282]

Roedean: found on five occasions: on the chalk bedrock within and around an old piddock burrow, Rhodophyta belt, *c*. 1.1 m ACD, 6.6.82; on a flint cobble, *c*. 1.1 m ACD, and a concrete vertical (base of groyne), *c*. 1.0 m ACD, 20.8.82; on the underside of a chalk cobble, *F. serratus* belt, *c*. 1.9 m ACD (MLWN), 5.11.82, and similarly situated in the Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 14.4.83, and the *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 12.8.84.

Family **CRYPTOSULIDAE**

Cryptosula pallasiana (Moll, 1803) [Hayward & Ryland, 1999 Part 2: 194]

Roedean: a common and widespread species, maximal summer-early autumn. Found on the chalk bedrock (especially vertical and overhanging surfaces and within and around old piddock burrows) and on the undersides of stones (chalk and flint cobbles), *c*. 2.7 m ACD (*F. vesiculosus* belt) downwards; also found locally on concrete vertical and downward-facing surfaces (groynes, dismantled railway), *c*. 2.1-1.3 m ACD.

Kemp Town: five records only: on barnacles (*Semibalanus balanoides*) scraped from a flint cobble, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 1.11.82; on a seaward-facing concrete vertical (block detached

from groyne), *c*. 1.2 m ACD, 30.11.82; on the underside of a flint cobble, *c*. 1.0 m ACD, 17.3.83 and 9.9.83; on a concrete vertical (dismantled railway), *c*. 0.8 m ACD, 29.8.84.

Family **CELLEPORIDAE**

Cellepora pumicosa (Pallas, 1766) [Hayward & Ryland, 1999 Part 2: 320]

Kemp Town: one colony, *c*. 4 mm maximum diameter, on a *Laminaria hyperborea* holdfast, strand-line, 25.11.81.

Celleporina caliciformis (Lamouroux, 1816)) [Hayward & Ryland, 1999 Part 2: 324 as *hassallii*]

Kemp Town: several colonies on a *Laminaria hyperborea* holdfast, strand-line, 25.1.82.

Phylum **ECHINODERMATA**

Note. Members of this phylum were monitored March 1981-January 1985 at Roedean and May 1981-January 1985 at Kemp Town.

Class **ASTEROIDEA**

Order FORCIPULATIDA

Family **ASTERIIDAE**

Asterias rubens Linnaeus, 1758 [Mortensen, 1927: 139] Common starfish

Roedean: single specimens 5.4.81 and 20.8.82, then regularly recorded 29.11.82-19.12.84. Found mainly under stones, the small specimens favouring old piddock burrows in the undersides of chalk cobbles, *c*. 2.0 m ACD (*F. serratus* belt) downwards. Records of single individuals at the higher shore level of *c*. 2.6 m ACD (*F. vesiculosus* belt), 29.11.82, 12.1.83, 23.9.83 and 6.12.84, all during/shortly after periods of turbulence, were probably the result of upshore displacement by wave action.

One-a few per occasion, save 18.11.83 when quite frequent juveniles, *c*. 15-25 mm diameter, were found on the undersides of stones (chalk and flint cobbles), *c*. 1.9-1.1 m ACD (the latter being LW of the day). Specimens up to *c.* 140 mm diameter recorded.

Dead specimens, *c*. 100-200 mm diameter, on the strand-line (chance observations): 28.11.81 (four); 15.12.81 (common); 16.3.82 (quite frequent); 28.3.82 (frequent); 22.12.82 (common); 23.10.84 (occasional).

Kemp Town: intermittently recorded 1981-83 (3.7.81; 16.9.81; 15.10.81; 9.1.82; 9.4.82; 25.4.82; 24.5.82; 30.11.82; 9.9.83; 4.11.83), then regularly recorded 17.2.84-11.1.85. Found on/near mussels *c*. 1.3 m ACD (ALTL) downwards, mostly in local shelter (crevices, overhangs etc.) provided by artificial structures (storm-damaged terminal section of groyne, blocks detached from groyne, dismantled railway) or under stones.

One-a few per occasion, save 17.2.84, 17.3.84 and 17.4.84 when frequent specimens *c*. 15-60 mm, *c*. 20-60 mm and *c*. 35-65 mm diameter respectively, were found , mainly under stones, *c*. 1.0 m ACD downwards (LW of the day *c*. 0.5, *c*. 0.4 and *c*. 0.4 m ACD respectively). Specimens up to *c*. 180 mm diameter recorded.

A large population of *A. rubens* invaded the intertidal shortly after the regular monitoring period: found to be abundant and widespread on/near mussels in protected and exposed situations *c*. 1.1 m ACD downwards (LW *c*. 0.4 m ACD), 9.3.85; mostly 5-15 per sq. m (diameter range *c*. 25-200 mm), but locally astride the LW mark, completely blanketing mussel patches, with up to *c*. 100 per sq. m (diameter of most specimens *c*. 120-180 mm).

Class **OPHIUROIDEA**

Order OPHIURIDA

Family **AMPHIURIDAE**

Amphipholis squamata (Delle Chiaje, 1828) [Mortensen, 1927: 221] Small brittlestar

Roedean: found on five occasions: single specimens amongst *Corallina officinalis* in small pools in depressions on the tops of concrete/embedded flint blocks (dismantled railway), *c*. 2.3 m ACD, 11.11.81 and 24.11.81; one amongst *C. officinalis*, *F. serratus* belt, *c*. 1.9 m ACD (MLWN), 11.1.82; one in a

scraping of *Halichondria panicea* and *Dynamena pumila* from a bedrock vertical, Rhodophyta belt, *c*. 1.0 m ACD, 7.2.82; six amongst *C. officinalis*, small pool on top of a concrete/embedded flint block (dismantled railway), *c*. 2.3 m ACD, 25.2.82.

Kemp Town: recorded in all seasons throughout the monitoring period, a moderate presence indicated February-May 1982 otherwise apparently sparing. Found in diverse habitats (amongst/on algae (Ectocarpales indet., *Laminaria saccharina* (frond), *Chondrus crispus, Polysiphonia fucoides*), hydroids (*Dynamena pumila, Sertularella gaudichaudi*) and *Mytilus edulis*, between empty paired valves of *Venerupis corrugata*, amongst *Molgula cf. socialis*, and (predominantly) under stones) variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts (and the transition between the two), *c*. 1.1-0.6 m ACD. One record at a higher shore level, viz. a single specimen amongst *Polysiphonia fucoides*, storm-damaged terminal section of groyne, *c*. 1.3 m ACD (ALTL), 12.2.83.

Class **ECHINOIDEA**

Order CAMARODONTA

Family **PARECHINIDAE**

Psammechinus miliaris (P.L.S. Müller, 1771) [Mortensen, 1927: 294] Green sea urchin

Roedean: one small specimen, *c*. 5.5 mm horizontal diameter (excluding the spines), under a stone, *F. serratus* belt, *c*. 1.6 m ACD, 31.1.84.

Kemp Town: one small specimen, *c*. 6 mm horizontal diameter (excluding the spines), under a stone, *Laminaria* belt, *c*. 0.7 m ACD, 26.3.82.

Order SPATANGOIDA

Family **LOVENIIDAE**

Echinocardium cordatum (Pennant, 1777) [Mortensen, 1927: 331] Sea potato

Kemp Town: one dead test, 40 mm long, stranded on the rocks, *c*. 1.1 m ACD, 14.5.83.

Phylum **CHORDATA**

Subphylum **TUNICATA**

Class **ASCIDIACEA**

Note. Members of this class were monitored January 1982-February 1985 (-December 1986 for *Molgula cf. socialis*).

Order APLOUSOBRANCHIA

Family **POLYCLINIDAE**

Morchellium argus (Milne Edwards, 1841) [Berrill, 1950: 95; Millar, 1970: 22]

Roedean: scattered colonies seasonally conspicuous on vertical and downward-facing surfaces (overhangs) on the end sections of two fallen-into-disrepair concrete groynes, *c*. 1.1-0.6 m ACD: 25.3.82-18.9.82; 28.3.83-8.9.83; 16.3.84-26.9.84. The inconspicuous autumn and overwintering stages in the life cycle went unrecorded. Twice detected on vertical surfaces on the chalk bedrock, Rhodophyta belt: one small colony, *c*. 1.2 m ACD, 2.3.84; one colony, *c*. 0.9 m ACD, 12.6.84.

Kemp Town: records paralleled those at Roedean, scattered colonies being seasonally conspicuous on vertical and downward-facing surfaces (overhangs) of concrete/embedded flint blocks (dismantled railway), *c*. 1.0-0.7 m ACD: 23.6.82-19.9.82 (no doubt more intensive searching would have detected small growing colonies prior to June); 29.3.83-24.9.83; 17.3.84-27.9.84. One record at a higher shore level, viz. a small colony on a concrete vertical (storm-damaged terminal section of groyne), *c*. 1.3 m ACD (ALTL), 15.4.83.

Ovingdean: one small colony on the underside of a flint cobble, *Laminaria* belt, *c*. 0.6 m ACD (MLWS), 16.4.84.

Order PHLEBOBRANCHIA

Family **CIONIDAE**

Ciona intestinalis (Linnaeus, 1767) [Berrill, 1950: 131; Millar, 1970: 39]

Roedean: a single specimen, *c*. 30 mm long, on the underside of a flint cobble, *Laminaria* belt, *c*. 0.6 m ACD, 28.9.84.

Family **ASCIDIIDAE**

Ascidiella scabra (Müller, 1776) [Berrill, 1950: 158; Millar, 1970: 45]

Kemp Town: three specimens, *c*. 30 mm long, on concrete verticals (dismantled railway), *c*. 0.8 m ACD, 29.8.84.

Order STOLIDOBRANCHIA

Family **STYELIDAE**

Styela clava Herdman, 1881 [Millar, 1970: 57]

Kemp Town: a single specimen, *c*. 40 mm long, suspended from the underside of a concrete overhang (dismantled railway), *c*. 0.8 m ACD, 27.9.84.

Dendrodoa grossularia (Van Beneden, 1846) [Berrill, 1950: 198; Millar, 1970: 64]

Roedean: single small depressed dome-shaped specimens found on two occasions on the same concrete groyne: on a vertical surface, *c*. 0.9 m ACD, 8.4.82; on a downward-facing surface, *c*. 1.0 m ACD, 22.6.82.

Kemp Town: small depressed dome-shaped specimens found on four occasions: one on the underside of a flint cobble, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 9.4.82; one on a concrete vertical (dismantled railway), *c*. 1.0 m ACD, 22.7.82; a cluster of specimens on a concrete vertical (dismantled railway), *c*. 0.9 m ACD, 19.10.82; one on a concrete vertical (dismantled railway), *c*. 0.8 m ACD, 9.2.85.

Botryllus schlosseri (Pallas, 1766) [Berrill, 1950: 216; Millar, 1970: 70]

Roedean: single small encrusting colonies found on three occasions: on the downward-facing surface of a concrete overhang (base of groyne), *c*. 1.0 m ACD, 22.6.82 (*c*. 30 mm maximum diameter); on the underside of a flint cobble, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, 3.11.83 (*c*. 15 mm maximum diameter); on the underside of a flint cobble, *Laminaria* belt, *c*. 0.6 m ACD, 28.9.84.

Kemp Town: single small colonies found on two occasions on mussels attached to concrete/embedded flint blocks (dismantled railway), each time the colony partially encrusting a pair of contiguous mussels: *c*. 1.1 m ACD, 10.8.83 (mussels on a horizontal surface); *c.* 0.8 m ACD, 27.9.84 (mussels on a vertical surface). A small colony with a scraping of *Bryopsis* sp. (a little) and *Gonothyraea loveni* from a concrete vertical (dismantled railway), *c*. 0.8 m ACD, 17.4.84.

Ovingdean: one small colony on the underside of a flint cobble (in company with *Botrylloides leachii* and a *Trivia arctica* specimen which feeds upon compound ascidians), *Laminaria* belt, *c*. 0.6 m ACD (MLWS), 28.9.84.

Botrylloides leachii (Savigny, 1816) [Berrill, 1950: 224; Millar, 1970: 71]

Roedean: records indicated a sparing presence throughout the monitoring period. Found mostly on rock and concrete (bases of groynes) vertical and downward-facing surfaces (overhangs) and on the undersides of stones (flint and chalk cobbles), and occasionally on the basal parts of algae (e.g. small colonies on *Fucus serratus, Corallina officinalis, Polysiphonia fucoides*), variously distributed *c*. 1.9 m ACD (MLWN) downwards, mostly at levels below *c*. 1.3 m ACD (ALTL). Also found twice on drift algae: *Laminaria hyperborea* (holdfast), 20.11.82; *Calliblepharis ciliata* (a single thallus), 10.9.84.

The largest recorded colony encrusted an area *c*. 70 x 50 mm on the underside of a flint cobble, *c*. 1.0 m ACD, 6.6.82.

Kemp Town: records indicated a sparing presence throughout the monitoring period as at Roedean. Found on vertical and downward-facing surfaces (overhangs) of concrete/embedded flint blocks (dismantled railway), *c*. 1.0-0.7 m ACD. One colony on *Chondrus crispus*, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 13.8.84.

The largest recorded colony encrusted an area *c*. 100 x 60 mm on a landward-facing concrete vertical (dismantled railway), *c*. 0.9 m ACD, 24.5.82; a comparable and similarly situated colony noted 13.6.84.

Ovingdean: one small colony on the underside of a flint cobble (in company with *Botryllus schlosseri* and a *Trivia arctica* specimen which feeds upon compound ascidians), *Laminaria* belt, *c*. 0.6 m ACD, 28.9.84.

Family **MOLGULIDAE**

Molgula cf. socialis Alder, 1863 [Hayward & Ryland, 2017: 691] Assigned to *Molgula manhattensis* (De Kay, 1843) [Berrill, 1950: 248; Millar, 1970] in Ventham (1992).

Roedean: very common and recorded throughout the monitoring period which for this species was extended to December 1986. Minimal in summer when often hard to find, most conspicuous in spring (especially1982) when full-grown specimens (up to 15-17 mm individual diameter, measured *in situ* and including sand adhering to test) carpeted many of the low eroded rock ridges within the easternmost 100 m stretch of the regular monitoring site, *c*. 1.0 m ACD (Rhodophyta belt) downwards, and scattered groups and individuals were widespread on a variety of substrata (bedrock, concrete (groynes), algae e.g. *Corallina officinalis*, *Polysiphonia fucoides*) as high as *c*. 1.3 m ACD *(F. serratus*-Rhodophyta transition, ALTL).

Kemp Town: very common and recorded throughout the extended monitoring period January 1982-December 1986. Seasonality paralleled Roedean: aggregations of full-grown specimens were particularly conspicuous and widespread in the spring of 1982 and 1983, occurring *c*. 1.1 m ACD (*Mytilus/Palmaria* belt) downwards, variously distributed on the bedrock and the concrete/embedded flint foundation blocks of the dismantled railway.

Ovingdean: seasonal checks through 1985 and 1986 revealed a widespread presence of *M. cf. socialis* to the east of Ovingdean Gap, the species being most conspicuously abundant in the spring *c*. 1.0 m ACD downwards (the lowest level examined *c*. 0.4 m ACD), attached to the bedrock and to the extensive though rather broken sheets of rock-encrusting tubes produced by a thriving population of *Sabellaria spinulosa* (*Sabellaria alveolata* undetected).

Subphylum **VERTEBRATA**

Superclass **GNATHOSTOMATA**

Note. Fishes (Pisces) were monitored August 1982-February 1985 but additionally presented are a number of records falling outside this period e.g. various specimens found dead on the strand-line and caught by anglers fishing from the marina west breakwater. Lengths are total length.

Class **ELASMOBRANCHII** Cartilaginous fishes

Order CARCHARHINIFORMES

Family **SCYLIORHINIDAE**

Scyliorhinus canicula (Linnaeus, 1758) [Wheeler, 1978: 13] Dogfish, Lesser-spotted dogfish

Roedean: single dead specimens on the strand-line: 16.3.82 (long dead, *c*. 300 mm long); 19.12.84 (fresh dead male, 545 mm long); 10.8.85. Single egg-cases on the strand-line: 28.12.83; 18.1.86.

Kemp Town: a dead specimen, 560 mm long, strand-line, 28.11.86. Single egg-cases on the strand-line: 14.11.82; 4.11.83.

Family **TRIAKIDAE**

Galeorhinus galeus (Linnaeus, 1758) [Wheeler, 1978: 17] Tope

Kemp Town: a fresh dead specimen, *c*. 700 mm long, washed ashore, 13.6.86.

Order RAJIFORMES

Family **RAJIDAE**

Raja sp(p). egg-cases

Roedean: occasional records on the strand-line (single specimens except where indicated): 2.11.81 (two); 11.2.83 (four); 27.2.83 (several); 15.3.83 (several); 28.3.83 (several); 23.9.83; 7.10.83; 17.12.83; 28.12.83; 1.4.84; 4.11.84; 26.1.85; 8.2.85.

Kemp Town: single specimens on the strand-line: 22.2.81; 28.11.82.

Class **ACTINOPTERYGII** Bony fishes

Infraclass TELEOSTEI

Order ANGUILLIFORMES

Family **ANGUILLIDAE**

Anguilla anguilla (Linnaeus, 1758) [Wheeler, 1978: 62] Eel

Roedean: two specimens, *c*. 120 and *c*. 170 mm long, under chalk cobbles in a pool, *F. serratus* belt, *c*. 1.9 m ACD (MLWN), 4.10.82; one, *c*. 200 mm long, amongst stones in a pool, *F. vesiculosus* belt, *c*. 2.6 m ACD, 11.6.83.

Kemp Town: a fresh dead specimen, 255 mm long, the right opercular opening and the caudal fin torn, found floating on its back in a channel, *c*. 1.2 m ACD, 2.6.84.

Order CLUPEIFORMES

Family **CLUPEIDAE**

Sardina pilchardus (Walbaum, 1792) [Wheeler, 1978: 68] Pilchard

Kemp Town: two O-group shoals, *c*. 60 and *c*. 100 fish per shoal, in pools in the *Laminaria* belt, *c*. 0.9 m ACD, 19.9.82, the eight specimens captured measuring 37-52 mm in length.

Sprattus sprattus (Linnaeus, 1758) [Wheeler, 1978: 67] Sprat

Roedean: a single juvenile, 55 mm long, in a pool in the *F. vesiculosus* belt, *c*. 2.6 m ACD, 10.7.83.

Clupeid postlarvae (species indeterminate)

Roedean: recorded in pools, variously distributed in the *F. vesiculosus* and *F. serratus* belts (down to the *F. serratus*-Rhodophyta transition), *c*. 3.0-1.3 m ACD: a group of three, the specimen captured measuring 40 mm in length, 29.4.83; a group of six, the specimen captured measuring 38 mm in length, 26.5.83; a solitary specimen, 25 mm long, and several small groups, 25.7.83; a shoal of *c*. 100, the specimen captured measuring 25 mm in length, the others in the shoal mostly rather larger, and several small groups, *c*. 10-15 per group, the specimen captured measuring 27 mm in length, 29.6.84; several small groups and shoals, up to 100 or more per shoal, the six specimens captured from various of the groups and shoals measuring 25-28 mm in length, 12.8.84.

Kemp Town: a solitary specimen, 32 mm long, in a pool in the *Laminaria* belt, *c*. 0.9 m ACD, 19.9.82 (possibly *Sardina pilchardus* (q.v.), as O-group fish of this species, length range 37-52 mm, were captured from two shoals in nearby pools on the same occasion).

Order SALMONIFORMES

Family **SALMONIDAE**

Salmo trutta Linnaeus, 1758 [Wheeler, 1978: 79] Trout

Ovingdean: a fresh dead specimen, 610 mm long, washed ashore, 24.8.85.

Order GOBIESOCIFORMES

Family **GOBIESOCIDAE**

Apletodon dentatus (Facciolà, 1887) [Wheeler, 1969: 575; 1978: 141 as *Apletodon microcephalus* (Brook, 1890)] (Specimens confirmed by Dr S. Hutchinson) Small-headed clingfish

Roedean: single specimens on two occasions: one, 25 mm long, in a small pocket (old eroded piddock burrow) in the underside of a chalk cobble, *Laminaria* belt, *c*. 0.6 m ACD (MLWS), 11.11.81; one, 26 mm long, in a pool, swimming from beneath recumbent partially immersed *F. vesiculosus* fronds when the fronds were drawn to one side, *F. vesiculosus* belt, *c*. 2.9 m ACD, 20.12.82 (a higher shore level than might be expected and perhaps the result of upshore displacement by wave action – a gale force south-westerly wind at the time of collection).

Ovingdean: one, 27.5 mm long, clinging to the underside of a flint cobble, *Laminaria* belt, *c*. 0.6 m ACD, 28.9.84.

Order GADIFORMES

Family **LOTIDAE**

Ciliata mustela (Linnaeus, 1758) [Wheeler, 1978: 162] Five-bearded rockling

Roedean: a very frequently encountered species. Found under stones in pools, variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.6-0.5 m ACD, chiefly below *c*. 1.9 m ACD (MLWN): 6.8.82; 20.8.82; 15.10.82-28.3.83; 12.5.83; 23.9.83-30.12.83; 16.3.84; 14.5.84; 31.5.84; 29.6.84; 28.8.84-23.10.84; 19.12.84 (on this occasion, a specimen, *c*. 60 mm long, in an old piddock burrow in the underside of a chalk cobble). One, *c*. 200 mm long, the largest specimen found live, under a concrete overhang (groyne-base immersed in standing water), *c*. 1.3 m ACD, 20.11.84.

One-a few per occasion, save 5.11.82 when frequent specimens (length range *c*. 65-100 mm) were found, *c*. 2.0-1.0 m ACD (the latter level being LW of the day). Only twice more than single specimens under individual stones, viz. two, *c*. 70 and *c*. 100 mm long, under a chalk cobble, *c*. 0.6 m ACD (MLWS), 16.3.84, and two, *c*. 80 and *c*. 130 mm long, under a chalk cobble, *c*. 1.1 m ACD, 31.5.84. One specimen, *c*. 75 mm long, in company with a juvenile shanny, *Lipophrys pholis*, *c*. 45 mm long, under a chalk cobble, *c*. 1.3 m ACD, 18.11.83.

A dead specimen, 240 mm long, with a gash in its abdomen, on top of a groyne, presumably left/dropped there by a gull or crow, *c*. 5.1 m ACD (MHWN), 21.4.83.

Late mackerel-midge stage juveniles, probably *C. mustela*, in pools on three occasions: one, 30 mm long, Rhodophyta belt, *c*. 0.9 m ACD, 12.6.84; two, *c*. 30 mm long, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, 29.6.84; one, 34 mm long, *F. vesiculosus* belt, *c*. 2.6 m ACD, 30.7.84.

Kemp Town: frequently recorded. Found under stones in pools, variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts (and the transition between the two), *c*. 1.1-0.5 m ACD: 19.9.82; 1.11.82; 29.12.82; 17.3.83-14.5.83; 8.10.83; 4.11.83; 17.2.84-2.5.84; 27.9.84; 9.2.85.

One-a few per occasion, save 8.10.83 when frequent specimens (length range *c*. 60-80 mm and one of *c*. 150 mm) were found, *c*. 0.8-0.5 m ACD. Single specimens under individual stones; three, all *c*. 90 mm long, under a brick in a small pool, *c*. 1.1 m ACD, 2.5.84.

Late mackerel-midge stage juveniles, probably *C. mustela*, in pools on three occasions: single specimens, *c*. 30 mm long, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 13.6.84 and 30.6.84; one, *c*. 35 mm long, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 31.7.84.

Family **GADIDAE**

Gadus morhua Linnaeus, 1758 [Wheeler, 1978: 148] Cod

Roedean: single fresh dead specimens, *c*. 450 mm long, on the strand-line, 2.11.81 and 10.11.81.

Pollachius pollachius (Linnaeus, 1758) [Schmidt, 1905: 17, Pl. 1, fig. 30 as *Gadus pollachius*] (Specimens confirmed by Mr D. F. Kelley and Dr P. J. Reay) Pollack

Roedean: O-group fish in pools on four occasions: a group of nine, the one captured measuring 27.5 mm in length, the others appearing similar in size, Rhodophyta belt, *c*. 0.9 m ACD, 26.5.83; a group of 12, the one captured measuring 45 mm in length, the others appearing similar in size, *c*. 0.9 m ACD, 11.6.83; a group of three, *c*. 40-50 mm long (none captured), *F. serratus* belt, *c*. 1.9 m ACD (MLWN), 25.6.83; a solitary specimen, 25 mm long, *F. serratus* belt, *c*. 2.0 m ACD, 29.6.84.

Trisopterus luscus (Linnaeus, 1758) [Wheeler, 1978: 156] Bib, Pouting

Kemp Town: fairly frequent small specimens, *c*. 150 mm long, caught by anglers fishing from the east side of the marina west breakwater near its seaward end, 20.9.86 and 21.9.86.

Order BELONIFORMES

Family **BELONIDAE**

Belone belone (Linnaeus, 1760) [Wheeler, 1978: 184] Garfish

Kemp Town: one, *c*. 460 mm long, caught by an angler fishing from the west side of the marina west breakwater about three quarters of the way towards its seaward end, 27.8.90.

Order ATHERINIFORMES

Family **ATHERINIDAE**

Atherina presbyter Cuvier, 1829 [Russell, 1976: 323; Wheeler, 1978: 186] Sand-smelt

Note. Bamber & Henderson (1985) showed that *Atherina boyeri* Risso, 1810 and *A. presbyter* Cuvier, 1829 represent the tails of a continuum of form and should thus both be referred to as *A. boyeri*.

Roedean: postlarvae, provisionally identified as sand-smelt, in pools, variously distributed in the *F. vesiculosus*, *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.0-0.6 m ACD: frequent small shoals (number per shoal unrecorded), all apparently sand-smelt, *c*. 3.0 m ACD downwards (LW *c*. 1.1 m ACD), the two specimens captured measuring 15 and 16 mm in length, 6.7.82; similar shoals fairly frequent, *c*. 3.0 m ACD downwards (LW *c*. 0.6 m ACD), the two specimens captured measuring 10 and 11 mm in length, 21.7.82; occasional groups of up to *c*. 10, all apparently sand-smelt, *c.* 2.6 m ACD downwards (LW *c*. 1.0 m ACD), the single specimen captured measuring 11 mm in length, 25.6.83; a group of six, *c*. 2.0 m ACD, the single specimen captured measuring 13 mm in length, 10.7.83; occasional small groups, all apparently sand-smelt, *c*. 3.0 m ACD downwards (LW *c*. 0.6 m ACD), the two specimens captured measuring 8.5 and 9 mm in length, 9.8.83; frequent groups of up to *c*. 15, all apparently sand-smelt, *c*. 2.6-1.3 m ACD, the two specimens captured measuring 9 and 10 mm in length, 29.6.84; shoals of up to 100 or more frequent, all apparently sand-smelt, *c*. 3.0 m ACD downwards (LW *c*. 0.9 m ACD), the seven specimens captured from various shoals measuring 10-17 mm in length, 30.7.84.

Ovingdean: one dead adult sand-smelt, *c*. 130 mm long, stranded near LW, *c*. 0.5 m ACD, 7.4.85.

Order GASTEROSTEIFORMES

Family **GASTEROSTEIDAE**

Spinachia spinachia (Linnaeus, 1758) [Wheeler, 1978: 198] Fifteen-spined stickleback

Roedean: six in a pool, darting for cover of algae when startled, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 4.9.82, the one captured measuring 90 mm in length, the others appearing similar in size.

Kemp Town: one, *c*. 90-100 mm long, *Laminaria* belt, just below the LW mark *c*. 0.6 m ACD (MLWS), feeding on *Siriella armata* which hovered there in large numbers, 19.9.82, and on the same occasion, the tail end of another specimen seen protruding *c.* 25-30 mm from the mouth of a sea scorpion, *Taurulus bubalis*, *c*. 100 mm long, the latter taking cover under recumbent *Laminaria saccharina* fronds in a pool, *c*. 0.7 m ACD, its prey apparently firmly lodged and too large to swallow.

Order SYNGNATHIFORMES

Family **SYNGNATHIDAE**

Syngnathus acus Linnaeus, 1758 [Wheeler, 1978: 200] Greater pipefish

Roedean: single specimens in pools (partially sandy-bottomed with some cobbles) on two occasions, both times the fish lying still and unconcealed on the bottom: one, 345 mm long, picked up by hand out of the pool without reaction, save very weak movements of the tail, Rhodophyta belt, *c*. 0.9 m ACD, 11.6.83; the other similar in size, *F. serratus* belt, *c*. 1.9 m ACD (MLWN), 25.6.83. A long dead desiccated specimen measuring 410 mm in length, strand-line, 10.8.85.

Order SCORPAENIFORMES

Family **COTTIDAE**

Taurulus bubalis (Euphrasen, 1786) [Wheeler, 1978: 220] Sea scorpion

Roedean: a commonly encountered species. Found in pools (where usually concealed under algae e.g. the distal portions of *F. serratus* fronds hanging immersed from thalli attached to the surrounding rocks, the specimens found away from such cover usually partially buried in sand), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.1-0.5 m ACD, rarely above *c*. 2.6 m ACD: 20.8.82-15.3.83; 26.5.83-1.12.83; 14.5.84-19.12.84; 4.2.85.

One-a few per occasion, save 18.9.82, 4.10.82, 21.10.82, 5.11.82, 8.9.83 when frequent specimens were found.

Kemp Town: recorded on nine occasions. Found in pools (under cover of recumbent *Laminaria saccharina* fronds or away from such cover partially buried in sand), variously distributed in the *Mytilus/Palmaria-Laminaria* transition and the *Laminaria* belt, *c*. 1.0-0.5 m ACD: 19.9.82; 1.11.82; 30.11.82; 29.12.82; 10.8.83; 4.11.83; 17.3.84; 17.4.84; 13.8.84.

One-two per occasion, save 19.9.82 when fairly frequent specimens were found, one of which had taken cover under recumbent *L. saccharina* fronds in a pool, *c*. 0.7 m ACD, with a captured *Spinachia spinachia* (q.v.).

Family **CYCLOPTERIDAE**

Cyclopterus lumpus Linnaeus, 1758 [Russell, 1976: 355 (eggs); Wheeler, 1969: 501; 1978: 226] Lumpsucker

Roedean: young in pools on two occasions: occasional specimens here and there, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 29.6.84, the two captured (from the same pool) measuring 14 and 16 mm in length; one, 18 mm long, Rhodophyta belt, *c*. 0.9 m ACD, 30.7.84.

Kemp Town: young in pools in the *Laminaria* belt on two occasions: one, 15.5 mm long, *c*. 0.5 m ACD, 10.8.83; one, 17.5 mm long, *c*. 0.9 m ACD, 29.8.84.

Ovingdean: a long dead adult, measuring 305 mm in length, strand-line, 1.4.86 (a grey mullet and three ballan wrasse, *Labrus bergylta*, nearby).

Egg masses: three on the strand-line, 16.3.82, Roedean, roughly ovate in shape, the one collected having a greater diameter of *c*. 90 mm and a lesser of *c*. 50 mm, the others similar in size.

Family **LIPARIDAE**

Liparis montagui (Donovan, 1804) [Russell, 1976: 361 (eggs); Wheeler, 1978: 228] Montagu's sea-snail

Roedean: three young in a pool, clinging to the distal portion of a *Laminaria saccharina* frond, Rhodophyta belt, *c*. 1.0 m ACD, 22.6.82, the one captured measuring 18 mm in length, the others similar in size.

Kemp Town: single specimens in pools on three occasions: one, 46 mm long, swimming near the surface, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 10.12.81; one, 32 mm long, clinging to the underside of a flint cobble, *Laminaria* belt, *c*. 0.7 m ACD, 8.10.83, and another, 55 mm long, similarly situated, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 17.2.84.

Egg clumps: found on two occasions at Roedean: one on a filamentous rhodophyte, *c*. 0.7 m ACD, 5.5.81; one on *Chondrus crispus* and two on a filamentous rhodophyte, *c*. 0.8-0.7 m ACD, 25.3.82.

Order MUGILIFORMES

Family **MUGILIDAE**

Chelon labrosus (Risso, 1827) [Wheeler, 1978: 270] Thick-lipped grey mullet

Note. Surprisingly, young grey mullet were never detected in rock pools; very young fish are known to be common in intertidal pools on the Channel coast in July and August (Wheeler 1969).

Roedean: fair-sized grey mullet seen by chance within the marina inner harbour (locked) in small groups (except where indicated) at/near the surface: 17.8.81; 18.7.82; 14.9.82; 5.7.83; 2.8.83; 11.8.83; 8.6.84; 21.6.84 (a solitary individual); 28.6.84; 14.8.84. Mostly observed at some distance (viewed from the undercliff walk); only on one occasion, when a small group could be observed more closely (nearer the undercliff walk), could the individuals be identified with some certainty as *C. labrosus*, their snouts virtually breaking surface, 2.8.83.

Ovingdean: a long dead grey mullet, measuring 460 mm in length, on the strand-line, 1.4.86 (a lumpsucker, *Cyclopterus lumpus*, and three ballan wrasse, *Labrus bergylta*, nearby).

Order PERCIFORMES

Family **MORONIDAE**

Dicentrarchus labrax (Linnaeus, 1758) [Bertolini, 1933: 310 as *Roccus labrax* (young stages); Wheeler, 1978: 231] Bass

Note. Several specimens confirmed by Mr D. F. Kelley and Dr P. J. Reay. To Mr Kelley's knowledge (pers. comm. 2.3.91) this was the only substantiated record of O-group bass frequenting ordinary rock pools on the open coast away from their normal habitats in estuaries and brackish-water harbours (Adur estuary (Shoreham), Chichester Harbour, Langstone Harbour etc.). Mr Kelley interpreted the record as follows: "In the three sampling years, 1982-84, bass spawning was successful and O-groups were very abundant (Kelley 1991): a situation which could produce 'overflow' presence in unusual habitats. There may well have been similar occurrences in 1988-90, when again there were highly successful spawnings (Kelley 1991). The lengths recorded suggest growth rates, in the three sampling years, which were well below the rates in west coast estuaries in the corresponding periods. As growth of bass is normally faster on the south coast than on the west coast (Kelley 1988) it seems likely that development in the abnormal habitat was retarded, probably by lack of normal food."

Roedean: O-group fish in pools, variously distributed in the *F. vesiculosus* and *F. serratus* belts (down to the *F. serratus*-Rhodophyta transition), *c*. 3.0-1.3 m ACD: 6.8.82-20.11.82; 24.8.83-7.10.83; 12.8.84-13.12.84. Detailed records as follows: a shoal of *c*. 60, *c*. 3.0 m ACD, the single specimen captured measuring 24 mm in length, and occasional small groups, all apparently bass, at lower shore levels down to *c*. 1.3 m ACD, the single specimen captured measuring 33 mm in length, 6.8.82; scattered groups, all apparently bass, *c*. 2.6-1.3 m ACD, the single specimen captured measuring 45 mm in length, 17.8.82; two groups of *c*. 20, c. 3.0 and *c*. 2.6 m ACD respectively, the single specimen captured measuring 50 mm in length, 27.8.82; two groups, *c*. 30 and *c*. 40 per group, *c*. 2.6 and *c*. 1.9 m ACD respectively, the single specimen captured measuring 70 mm in length, 14.9.82; subsequently small groups, 3-6 per group (unsampled) were seen in the same two or three pools, *c*. 2.6-1.9 m ACD, on successive occasions 4.10.82-20.11.82, estimated length range *c*. 55-80 mm (the two *c*. 80 mm specimens occurring 4.10.82, otherwise fish did not appear to exceed *c*. 70 mm long); occasional small groups, 6-8 per group, all apparently bass, *c*. 2.6-1.9 m ACD, the single specimen captured measuring 31 mm in length, 24.8.83; two in a pool, *c*. 1.9 m ACD, neither captured, estimated lengths *c*. 60-65 mm, 8.9.83; a group of *c*. 30, *c*. 1.9 m ACD, none captured, estimated length range *c*. 45-70 mm, 7.10.83; frequent groups of up to 30 or more, all apparently bass, *c*. 2.0-1.3 m ACD, the two specimens captured measuring 19 and 20 mm in length, 12.8.84; subsequently solitary fish and small groups (none sampled) were seen in pools, variously distributed *c*. 3.0-1.9 m ACD, 28.8.84-13.12.84, their length range inadequately assessed, but none apparently exceeding *c*. 60 mm in September or *c*. 70 mm October-December (only a solitary specimen *c*. 65-70 mm long seen in December).

I-group fish: two, *c*. 90-100 mm long, observed in a pool, *c*. 1.9 m ACD (MLWN), 25.6.83.

Kemp Town: a shoal of *c*. 200-250 postlarvae in a pool in the transition between the *Mytilus/Palmaria* and *Laminaria* belts, *c*. 1.0 m ACD, the three specimens captured measuring 17, 17.5 and 18 mm in length, 11.7.83.

Family **CARANGIDAE**

Trachurus trachurus (Linnaeus, 1758) [Wheeler, 1978: 246] Scad

Roedean: two dead specimens, *c*. 200 mm long, on the undercliff walk (obsolete sea-wall) in the landward vicinity of the marina east breakwater root, *c*. 9.0 m ACD, 6.7.84, perhaps dropped there by gulls.

Family **LABRIDAE**

Symphodus melops (Linnaeus, 1758) [Ford, 1922: 696 (postlarva) as *Crenilabrus*; Russell, 1976: 221 (postlarva) as *Crenilabrus*; Wheeler, 1978: 282 as *Crenilabrus*] Corkwing wrasse

Roedean: young fish in pools, darting for cover of algae when startled (occasionally,the larger specimens dashing up under and straight through such cover where it fringed a pool, to lay motionless out of the pool near its edge), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.0-0.6 m ACD, rarely above the *F. vesiculosus*-*F. serratus* transition, *c*. 2.3 m ACD: 14.9.82-28.12.82 (probably overlooked August); 9.8.83-1.12.83; 12.8.84-23.10.84.

Common 4.10.82-13.11.82, 8.9.83 and 23.9.83, quite frequent 29.11.82 and 7.10.83, otherwise sparing. Never more than a few per pool.

Captured specimens (length indicated): 14.9.82 (43 mm); 18.9.82 (40 mm); 31.10.82 (60 mm); 28.12.82 (75 mm); 8.9.83 (62 mm). Other *S. melops* specimens were regularly captured to confirm identity, then immediately released (none exceeded *c*. 70-80 mm).

Postlarvae: a single specimen, 5.7 mm in length, caught up amongst Ectocarpales indet. epiphytic on a *Laminaria saccharina* frond, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD, 9.8.83; quite frequent wrasse postlarvae, including *S. melops* and *Labrus bergylta*, one of each captured, the former 8 mm in length, in a pool in the Rhodophyta belt, *c*. 1.0 m ACD, 30.7.84.

Kemp Town: a single uncaptured young wrasse, *c*. 20 mm long, probably *S. melops*, in a pool in the *Laminaria* belt, *c*. 0.7 m ACD, 29.8.84.

Labrus bergylta Ascanius, 1767 [Ford, 1922: 695 (postlarva); Russell, 1976: 218 (postlarva); Wheeler, 1978: 276] Ballan wrasse

Roedean: a young fish, 70 mm long, in a pool in the *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 18.9.82; a postlarva, 11 mm long, in a pool in the Rhodophyta belt, *c*. 1.0 m ACD, 30.7.84 (wrasse postlarvae quite frequent on this occasion – see *Symphodus melops* above).

Ovingdean: three long dead *L. bergylta*, *c*. 240, 270 and 300 mm long, on the strand-line, 1.4.86, possibly victims of an exceptionally cold February (a lumpsucker, *Cyclopterus lumpus*, and a grey mullet nearby).

Family **BLENNIIDAE**

Lipophrys pholis (Linnaeus, 1758) [Wheeler, 1978: 286] Shanny

Roedean: a commonly encountered species. Found in pools (where usually concealed under stones, including in old piddock burrows in the undersides of chalk cobbles), and rarely out of pools (sheltering under recumbent *Fucus* fronds), variously distributed in the *F. vesiculosus, F. serratus* and Rhodophyta belts and the Rhodophyta-*Laminaria* transition, *c*. 3.1-0.7 m ACD: 6.8.82-12.5.83; 9.8.83-1.5.84; 28.8.84-6.12.84. The lack of records June and July by no means implies absence.

One-a few per occasion, save 6.8.82-18.1.83, 23.10.84, 7.11.84 when quite frequent specimens were found.

Kemp Town: apparently scarce. Found in pools on six occasions only: a few *c*. 50-60 mm long, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 1.11.82 and 30.11.82; one, *c*. 70-80 mm long, *c*. 1.0 m ACD, 29.12.82; six very small specimens in a pool adjacent to the lower boundary of the beach, *c*. 1.3 m ACD (ALTL), 26.7.83, the one captured measuring 19 mm in length, presumably having very recently left the plankton (McIntosh 1905); one, *c*. 50-60 mm long, under a stone, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 4.11.83; three, *c*. 60-70 mm long, under stones, *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 17.2.84.

Parablennius gattorugine (Linnaeus, 1758) [Wheeler, 1978: 286] Tompot blenny

Kemp Town: a single specimen, 60 mm long, in an old piddock burrow in the underside of a chalk cobble, the cobble partially immersed in a pool, *Mytilus/Palmaria* belt, *c*. 1.1 m ACD, 5.10.82.

Family **PHOLIDAE**

Pholis gunnellus (Linnaeus, 1758) [Wheeler, 1978: 295] Butterfish

Roedean: recorded on 12 occasions. Found under stones in pools, variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.6-0.6 m ACD (single specimens, exceptions indicated): 18.9.82; 15.3.83; 28.3.83 (two); 12.5.83; 26.5.83; 16.3.84; 29.3.84; 1.5.84 (two); 14.5.84 (several); 12.6.84 (two, one of which occurred in an old piddock burrow in the underside of a chalk cobble); 28.8.84; 28.9.84 (two).

Kemp Town: recorded on seven occasions. Found under stones in pools, variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts (and the transition between the two), *c*. 1.1-0.5 m ACD (single

specimens, exceptions indicated): 5.9.82; 17.3.83; 29.3.83 (two); 10.8.83; 8.10.83; 17.2.84; 17.4.84 (quite frequent, *c*. 1.0-0.5 m ACD).

Ovingdean: single specimens found twice under stones (flint cobbles): Rhodophyta-*Laminaria* transition, *c*. 0.7 m ACD, 16.2.84; *Laminaria* belt, *c*. 0.5 m ACD, 16.4.84.

Family **AMMODYTIDAE** Sandeels

Roedean: young sandeels on eight occasions swimming in pools, variously distributed in the *F. serratus* and Rhodophyta belts (and the transition between the two), *c*. 2.0-0.8 m ACD: a solitary specimen, 26.5.83 (captured); three, 11.6.83; common, some of those in sandy-bottomed pools diving for the sand and burrowing (unsuccessfully where the sand layer too thin) when startled, 25.6.83 (four captured); six, 10.7.83; a startled individual burrowing rapidly into sand, 17.5.84; frequent, 29.6.84 (one captured); occasional, 30.7.84; quite frequent, diving for sand and burrowing rapidly when startled, 12.8.84.

The six specimens captured (indicated above) and an additional specimen found dead at Ovingdean, identified as follows:

Ammodytes tobianus Linnaeus, 1758 [Reay, 1986: 946, 947] (Confirmed by Dr P. J. Reay) Lesser sandeel

Roedean: captured in pools on two occasions: one, 35 mm long, *c*. 1.3 m ACD, 26.5.83; two, 45 mm long, *c*. 1.9-1.3 m ACD, 25.6.83 (two *Hyperoplus immaculatus* captured on the same occasion).

Ovingdean: a fresh dead specimen, 50 mm long, stranded on sand, the sand fairly extensively overlying the chalk platform at this locality, *c*. 1.2 m ACD, 18.5.85.

Hyperoplus immaculatus (Corbin, 1950) [Reay, 1986: 949] (Identified by Dr P. J. Reay) Corbin's sandeel

Roedean: captured in pools on two occasions: 55 and 62 mm long, *c*. 1.9-1.3 m ACD, 25.6.83 (two *Ammodytes tobianus* captured on the same occasion); one, 80 mm long, *c*. 1.3 m ACD (ALTL), 29.6.84.

Family **GOBIIDAE**

Aphia minuta (Risso, 1810) [Wheeler, 1978: 311] Transparent goby

Roedean: recorded in pools on two occasions: several small groups of fish, 5-7 per group, variously distributed in the *F. serratus* belt and the *F. serratus*-Rhodophyta transition, *c*. 1.9-1.3 m ACD, 25.6.83, the single specimen captured measuring 37 mm in length; frequent small groups, up to 10 or a few more per group, variously distributed in the *F. vesiculosus* and *F. serratus* belts, *c*. 3.0-1.9 m ACD, mainly the *F. serratus* belt, *c*. 2.0-1.9 m ACD, 29.6.84, the single specimen captured measuring 50 mm in length.

Gobius paganellus Linnaeus, 1758 [Wheeler, 1978: 304] Rock goby

Roedean: young fish captured in pools, variously distributed in the *F. vesiculosus, F. serratus* and Rhodophyta belts, *c*. 3.1-0.8 m ACD (length of each specimen indicated): 6.8.82 (15 mm, 22 mm, 25 mm); 27.8.82 (22 mm, 28 mm); 18.9.82 (35mm, 50 mm); 20.10.82 (30 mm); 8.9.83 (15 mm); 18.11.83 (40 mm); 10.9.84 (29.5 mm); 20.11.84 (31 mm).

Gobiusculus flavescens (Fabricius, 1779) [Wheeler, 1978: 312] Two-spotted goby

Roedean: recorded in pools, variously distributed in the *F. serratus* belt and the *F. serratus*-Rhodophyta transition, *c*. 2.0-1.3 m ACD (length of captured specimens indicated): 6.8.82 (25 mm); 20.8.82; 27.8.82; 4.9.82; 14.9.82 (27 mm), 4.10.82; 15.10.82 (33 mm); 10.7.83 (22 mm); 25.7.83; 26.9.84. Never more than a few small groups (up to 10 or a few more per group) per occasion.

Kemp Town: a solitary specimen, 20 mm long, in a pool in the *Laminaria* belt, *c*. 0.9 m ACD, 29.8.84.

Pomatoschistus minutus (Pallas, 1770) [Wheeler, 1978: 315] Sand goby

Roedean: captured in pools, mainly sandy pools, variously distributed in the *F. vesiculosus, F. serratus* and Rhodophyta belts, *c*. 3.1-1.0 m ACD (length of each specimen indicated): 27.8.82 (25 mm); 4.9.82 (30 mm); 14.9.82 (25 mm, 28 mm, 30 mm, 32 mm, 34 mm, 35 mm, 35 mm); 5.11.82 (34 mm); 10.5.83 (42 mm); 26.5.83 (39 mm, 45 mm); 10.7.83 (42 mm); 25.7.83 (34 mm); 12.6.84 (55 mm); 29.6.84 (23 mm, 50 mm); 28.8.84 (28 mm); 10.9.84 (30 mm).

Kemp Town: gobies, probably *P. minutus*, observed on six occasions in pools, variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts (and the transition between the two), *c*. 1.1-0.6 m ACD: 7.8.82 (a few); 19.9.82 (a few); 10.8.83 (a few); 30.6.84 (frequent); 31.7.84 (one); 29.8.84 (fairly common).

Family **SCOMBRIDAE**

Scomber scombrus Linnaeus, 1758 [Wheeler, 1978: 326] Mackerel

Chance observations:

Roedean: a dead specimen, *c*. 300 mm long, on the strand-line, 16.11.81; three large shoals close inshore, 25.6.83; a fairly large shoal close inshore to the east of the regular monitoring site, 15.6.85; one large and three smaller shoals, at/near the surface over intertidal rocks (*c*. 1.9 (MLWN) – 1.3 (ALTL) m ACD) between the western boundary of the regular monitoring site and the marina east breakwater root, attracting *c*. 200 gulls, mainly herring gulls, *c*. 0630 BST, (predicted HW, 0448 BST, 5.1 m ACD i.e. MHWN), 31.5.86.

Kemp Town: large numbers (exceptions indicated) caught by anglers fishing from the west side of the marina west breakwater: 26.6.81; 8.6.82; 10.7.86; 12.7.86; 14.7.86; 19.8.86 (occasional specimens); 20.9.86 (occasional); 21.9.86 (occasional); 19.5.88; July 1990.

Shoals observed close inshore: 8.7.82; 8.7.83; 17.6.85; 21.7.89.

Order PLEURONECTIFORMES

Family **PLEURONECTIDAE**

Pleuronectes platessa Linnaeus, 1758 [Wheeler, 1978: 352] Plaice

Roedean: O-group fish in partially sandy-bottomed pools on three occasions in 1984: *c*. 10 or a few more, length range *c*. 20-45 mm, in a pool in the *F. serratus* belt, *c*. 1.9 m ACD (MLWN), the two specimens captured measuring 43 mm in length, 12.6.84; several in a pool in the *F. vesiculosus* belt, *c*. 2.6 m ACD, the single specimen captured measuring 45 mm in length, and several in a pool in the *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), the single specimen captured measuring 17 mm in length, 29.6.84; a solitary uncaptured specimen, *F. vesiculosus* belt, *c*. 2.6 m ACD, 12.7.84.

A dead adult, 330 mm long, on the strand-line, 24.10.86.

Family **SOLEIDAE**

Solea solea (Linnaeus, 1758) [Wheeler, 1978: 363] Sole, Dover sole

Roedean: two O-group specimens, 30 mm long, in a partially sandy-bottomed pool, the fish resting on bare chalk, *F. vesiculosus* belt, *c*. 2.6 m ACD, 10.7.83

APPENDIX

Kingdom **CHROMISTA**

Subkingdom HAROSA

Infrakingdom RHIZARIA

Phylum **FORAMINIFERA**

Note. Members of this phylum were monitored January 1984-February 1985 at which time they were regarded as protozoans, hence inclusion in Ventham (1992).

Class **TUBOTHALAMEA**

Order MILIOLIDA

Suborder MILIOLINA

Superfamily CORNUSPIROIDEA

Family **CORNUSPIRIDAE**

Cornuspira involvens (Reuss, 1950) [Murray, 1979: 29 as *Cyclogyra involvens*]

Roedean: several specimens on *Dynamena pumila*, *F. serratus* belt, *c*. 1.4 m ACD, 10.9.84.

Kemp Town: a single specimen on *Kirchenpaueria pinnata*, concrete vertical (dismantled railway), *c*. 0.9 m ACD, 13.6.84.

Superfamily MILIOLOIDEA

Family **SPIROLOCULINIDAE**

Spiroloculina excavata d'Orbigny, 1846 [Murray, 1979: 29]

Roedean: a single specimen amongst diatom-coated *Cladophora sericea*, *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 28.8.84.

Kemp Town: a single specimen amongst Ectocarpales indet., *Mytilus/Palmaria-Laminaria* transition, *c*. 1.0 m ACD, 2.5.84.

Family **HAUERINIDAE**

Massilina secans (d'Orbigny, 1826) [Murray, 1979: 36]

Roedean: found commonly amongst algae (Ectocarpales indet., *Cladophora sericea, Rhodothamniella floridula, Gelidium pusillum, Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides*) and rarely amongst hydroids (*Laomedea flexuosa, Dynamena pumila, Sertularia argentea*), variously distributed in the *F. serratus* (*F. vesiculosus-F. serratus* transition downwards), Rhodophyta and *Laminaria* belts, *c*. 2.3-0.6 m ACD: 31.1.84-8.2.85. Never more than a few per sample.

Kemp Town: found twice only: one in a scraping of *Dynamena pumila* and *Sertularella gaudichaudi* from the downward-facing surface of a concrete overhang (dismantled railway), *c*. 0.9 m ACD, 11.9.84;

several amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), *Laminaria* belt, *c*. 0.8 m ACD, 24.10.84.

Miliolinella subrotunda (Montagu, 1803) [Murray, 1979: 36]

Roedean: found quite frequently amongst algae (Ectocarpales indet., *Polysiphonia fucoides* supporting epiphytic *Ceramium* sp.) and rarely amongst hydroids (*Laomedea flexuosa, Sertularia argentea*), variously distributed in the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.6-0.5 m ACD: 31.1.84-14.4.84; 12.6.84; 29.6.84; 12.7.84; 20.11.84-18.1.85. Number per sample, one-a few.

Kemp Town: single specimens found four times amongst algae (three times amongst Ectocarpales indet., once amongst *Polysiphonia fucoides* supporting epiphytic *Ceramium* sp.), variously distributed in the *Mytilus/Palmaria-Laminaria* transition and the *Laminaria* belt, *c*. 1.0-0.7 m ACD: 2.5.84; 15.5.84; 29.8.84; 9.2.85 (*P. fucoides*). Several in a scraping of *Halichondria panicea, Dynamena pumila, Kirchenpaueria pinnata* and *Botrylloides leachii* from a concrete vertical (dismantled railway), *c*. 0.9 m ACD, 13.6.84.

Class **GLOBOTHALAMEA**

Subclass **TEXTULARIANA**

Order LITUOLIDA

Suborder LITUOLINA

Superfamily RECURVOIDOIDEA

Family **AMMOSPHAEROIDINIDAE**

Cribrostomoides jeffreysii (Williamson, 1858) [Murray, 1979: 24]

Roedean: single specimens found six times amongst algae (once amongst *Cladophora sericea*, five times amongst *Polysiphonia fucoides* supporting epiphytic *Ceramium* sp.), variously distributed in the *F. serratus* and Rhodophyta belts, *c*. 1.9-0.8 m ACD: 17.1.84 (twice); 15.2.84; 28.8.84 (*C. sericea*); 20.11.84; 8.2.85. A single specimen amongst *Sertularia argentea*, concrete vertical (base of groyne), *c*. 0.5 m ACD, 14.4.84.

Kemp Town: one in a scraping of *Dynamena pumila* and young ascidians (*Dendrodoa grossularia, Molgula cf. socialis*) from a concrete vertical (dismantled railway), *c*. 0.8 m ACD, 9.2.85.

Suborder TROCHAMMININA

Superfamily TROCHAMMINOIDEA

Family **TROCHAMMINIDAE**

Lepidodeuterammina ochracea (Williamson, 1858) [Murray, 1979: 28 as *Trochammina ochracea*]

Roedean: found twice: one amongst Ectocarpales indet., *F. serratus* belt, *c*. 2.0 m ACD, 31.5.84; two amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.), Rhodophyta belt, *c*. 1.1 m ACD, 20.11.84.

Subclass **ROTALIANA**

Order ROTALIIDA

Superfamily CASSIDULINOIDEA

Family **BOLIVINITIDAE**

Bolivina variabilis (Williamson, 1858) [Murray, 1979: 42 as *Brizalina variabilis*]

Roedean: found quite frequently amongst algae (Ectocarpales indet., *Cladophora sericea, Polysiphonia fucoides* supporting epiphytic *Ceramium* sp.) and rarely amongst hydroids (*Dynamena pumila, Sertularia argentea*), variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 2.0-0.5 m ACD: 31.1.84-31.5.84; 12.7.84; 28.8.84; 7.11.84-12.1.85. Number per sample, one-a few.

Superfamily ROTALIOIDEA

Family **AMMONIIDAE**

Ammonia batava (Hofker, 1951) [Murray, 1979: 56 as *Ammonia beccarii* (Linnaeus, 1758) variant *batavus* Hofker]

Roedean: not infrequently found amongst *Polysiphonia fucoides* (supporting epiphytic *Ceramium* sp.) and rarely in other habitats (Ectocarpales indet., *Sertularia argentea*, detrital sandy sediment bound by *Polydora ciliata* chimneys), variously distributed in the *F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 1.9-0.5 m ACD: 17.1.84-14.5.84; 12.7.84; 12.8.84; 28.8.84; 20.11.84-18.1.85. Number per sample, one-two, mostly single specimens.

Kemp Town: one amongst Ectocarpales indet., *c*. 1.0 m ACD, and one amongst *Hartlaubella gelatinosa* (densely coated with diatoms and heavily laden with detrital sandy sediment), *c*. 1.1 m ACD, 2.5.84.

Family **ELPHIDIIDAE**

Elphidium macellum (Fichtel & Moll, 1798) [Murray, 1979: 48]

Roedean: found very commonly amongst algae (Ectocarpales indet., *Cladophora sericea, Gelidium pusillum, Corallina officinalis, Ceramium* sp., *Halurus flosculosus, Polysiphonia fucoides*), especially *P. fucoides* (supporting epiphytic *Ceramium* sp.), and quite frequently in other habitat samples (*Dynamena pumila, Sertularia argentea*, rock scrapings containing a variety of small algal and hydroid growths etc.), variously collected from the *F. vesiculosus, F. serratus*, Rhodophyta and *Laminaria* belts, *c*. 3.0-0.5 m ACD: 17.1.84-8.2.85.

Number per sample, small-moderate, the moderate numbers occurring January, March, April, July, August, September, December 1984; a large number once amongst *P. fucoides* (supporting epiphytic *Ceramium* sp.), *F. serratus*-Rhodophyta transition, *c*. 1.3 m ACD (ALTL), 12.7.84.

Kemp Town: found quite frequently amongst algae (tube-dwelling diatoms, Ectocarpales indet., *Polysiphonia fucoides* usually supporting epiphytic *Ceramium* sp.) and hydroids (*Hartlaubella gelatinosa, Dynamena pumila, Sertularia argentea*), variously distributed in the *Mytilus/Palmaria* and *Laminaria* belts and the transition between the two, *c*. 1.1-0.7 m ACD: 18.1.84; 17.2.84; 2.4.84-24.10.84; 9.2.85. Never more than a small number per sample.

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