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A GUIDE TO THE BRITISH COASTAL MYSIDACEA

By P. MAKINGS

Department of Zoology, University College of Swansea

Introduction

The Mysidacea (or "Mysids") are small, free-swimming Crustaceans, commonly known as Opossum Shrimps. Their general appearance is illustrated in Fig. 1 A-D. They are an important component of the sub-littoral fauna, being scavengers as well as filter-feeders and a major item in the diet of many fish. Twenty-nine species may be found on or near British shores, some in tide pools, some in estuaries and others only in deeper water. Several are abundant in shallow water all round the coast, sometimes so much so that enormous numbers are taken in nets at low tide. During the daytime they remain near the bottom, so are not often found in plankton hauls except at night.

Mysids have to be looked at carefully if they are to be accurately identified. At the moment no adequate key is readily available that deals specifically with the British coastal species. Mauchline (1971*a*) provides a key to the species of the Clyde sea area, but because of its localized scope this omits a few of the coastal mysids found elsewhere, while including some from deeper water.

The key in French by Nouvel (1951–63) sometimes relies on characters which may be difficult for the novice to judge and it deals with the whole N.E. Atlantic area. Tattersall and Tattersall (1951) have dealt with all the British species but not always in key form. Also, revised systematics have made these works to some extent out of date. Nevertheless, the Tattersalls' monograph is an indispensable handbook, covering the various aspects much more thoroughly than the outline given here and it includes the deep-water fauna.

This outline of classification and biology, together with a key and descriptive notes on each species, provides an introduction to those which may be taken at depths down to 20 m. By ignoring the large number of deep-water forms, the key is made simpler and more convenient than those in comprehensive works. It uses the most easily distinguishable characteristics while avoiding those restricted to one sex, combining several where one alone is unreliable or difficult to decide.

As an additional help when sorting material of mixed or uncertain origin, a separate condensed key to all the British genera, derived from the Tattersalls', has been added as an appendix. For the sake of completeness, none of the genera have been omitted from the appendix, although some of them are extremely rare.

Classification

The Crustacea, of which the Mysidacea form a small part, is one of the main divisions of the Arthropoda, by far the largest group in the Animal Kingdom. The evolutionary history (phylogeny) of the Arthropoda has been fundamentally reappraised by Manton (1973), Cisne (1974) and others. Consequently the Crustacea may be elevated to the status of a Sub-phylum or even Phylum, having been formerly ranked as a Superclass (Manton, 1969) or more traditionally as a Class. However, the classification adopted in Table 1 accords with that of Mauchline (1971*a*). In this scheme the Mysidacea form a group of the same systematic status as the Isopoda and the Amphipoda, being an Order within the Subclass Peracarida. The subdivision of the Order in Table 1 follows Tattersall and Tattersall (1951).

Historically, the name Schizopoda was applied to the Mysidacea and Euphausiacea collectively. This was abandoned long ago when it was realized that on anatomical grounds the Euphausiacea should be placed together with the Decapoda (which includes shrimps and crabs, for example) in the Subclass Eucarida.

The Mysidacea are characterized by a well-developed carapace fused with only the anterior segments of the thorax but covering most of it (Fig. 1A-D). The appendages are biramous, that is each one has an outer limb or exopodite (exopod for short) and an inner limb or endopodite (endopod) (Fig. 1E). The antenna, like the other appendages, is biramous and its exopod forms a distinct "antennal scale" while the endopod forms a long "feeler" called the flagellum (Fig. 1 D, H). The thoracic

Table 1. *Classification of the British Mysidacea and list of the coastal species.* (*Modified after Mauchline, 1971 and Tattersall and Tattersall, 1951*).

(a) The Higher Classification	
Phylum Arthropoda	
Sub-phylum	Crustacea
Superclass	Malacostraca
Class	Eumalacostraca
Subclass	Peracarida
Order	Mysidacea
Suborder	Lophogastrida
Family	Lophogastridae
Family	Eucopiidae
Suborder	Mysida
Family	Petalophthalmidae
Family	Mysidae

(b) Subdivisions of the Family Mysidae		
Subfamily	Boreomysinae	......
Subfamily	Siriellinae	*Siriella armata*
		clausii
		jaltensis
		norvegica
Subfamily	Gastrosaccinae	*Gastrosaccus sanctus*
		normani
		lobatus
		spinifer
		Anchialina agilis
Subfamily	Mysinae	
	Tribe Erythropinae	*Erythrops elegans*
	Tribe Leptomysinae	*Leptomysis gracilis*
		mediterranea
		lingvura
		Mysidopsis angusta
		gibbosa
	Tribe Mysinae	*Hemimysis lamornae*
		Paramysis nouveli
		arenosa
		Schistomysis ornata
		kervillei
		spiritus
		parkeri
		Praunus flexuosus
		neglectus
		inermis
		Mesopodopsis slabberi
		Neomysis integer
		Acanthomysis longicornis
	Tribe Heteromysinae	*Heteromysis formosa*
Subfamily	Mysidellinae	......

limbs have well developed fringed exopods which curve up beside the body and are used for swimming (natatory) (Fig. 1 A-E). Their endopods form simple walking legs except in the case of the first one or two pairs which have smaller, modified endopods used as accessory mouthparts (maxillipeds). The abdominal appendages (pleopods, Fig. 1 A-C) are often small, sometimes reduced so much that each one consists of only a single finger-like process. The last pair is always well developed and biramous but flattened to form part of the "tail fan". These are called the uropods (Fig. 1 D, K, L). Most genera have an organ of balance (a statocyst) within each endouropod (Fig. 1 D, K). A few have branched gills at the bases of the thoracic legs.

The group is divided initially into the Suborders Lophogastrida and Mysida. The Lophogastrida have gills on the thoracic limbs; a brood pouch (or marsupium Fig. 1 A) in the adult female formed of seven pairs of thin plates called oostegites; well developed natatory pleopods in both sexes; and no statocyst. They comprise only two small families, restricted to offshore water below about 100 m, usually much deeper.

The Mysida are more advanced. They have no gills, depending on respiratory exchange through the body surface, principally through the carapace; a marsupium made up of usually only two or three pairs of oostegites; pleopods of the female and sometimes of the male too considerably reduced (one of them often elongated for mating in the male, e.g. 4th pleopod, Fig. 1C). This group likewise includes two families. One of these, the Petalophthalmidae, is restricted to depths of more than 500 m, with few species. They have no statocyst. The other family is the Mysidae, a very large assembly which includes all the British coastal species as well as many deep-water ones. These all have a statocyst in each endouropod (Fig. 1 D, K). All the specimens illustrated in Figs. 1 & 2 belong to this family.

Structure and Biology

The Mysidacea have largely retained the primitive "caridoid facies"* and therefore look much more shrimp-like than the other Peracarida. Their general appearance and morphology are shown in Fig. 1 which illustrates specimens of the family Mysidae to show particularly the features which are important for identification.

None of these animals grows very large, though some of the Lophogastrida reach 15 cm or more. The family Mysidae which includes all the British coastal species are all less than 3 cm long, the smallest being *Erythrops elegans* with a maximum size of about 6 mm. There is no larval stage; the juveniles resemble the adults and they are seldom less than about 2 or 3 mm long when released by the female.

In a general way, the Mysidae may be recognized in the field by their more or less cylindrical form and small size, their rather shrimp-like appearance and their free-swimming habit. The prominent glass-like statocyst in the swollen base of each

* The "caridoid facies" is a set of features common to most members of the larger Crustacea and giving many of them some similarity of appearance. It is thought to have been established early in the evolutionary history of the group and is most familiar to us in the common prawn and lobster. It includes the more or less cylindrical segmented body with six of the segments fused to form the head, eight forming the thorax and six the abdomen; a protective carapace covering most of the head and thorax; a well developed abdomen with a terminal telson on the last segment, the associated pair of appendages (uropods) being flattened to form a tail fan which can be flapped forward under the body by flexure of the abdomen; biramous limbs on both abdomen and thorax; a biramous antennule (Fig. 1 D); modification of the antennal exopodite into a flat hydrodynamic "scale" (Fig. 1 D, H); and stalked eyes. This collection of features, conveniently summed up as the "caridoid facies", is often superseded in more specialized groups of Malacostraca such as the Isopods and Amphipods.

endouropod (Fig. 1 D, K) is sufficient to distinguish members of this family from other Crustacea, especially from Euphausiids, which resemble them superficially. Mysids also differ from Euphausiids by having the posterior thoracic segments free from the carapace (Fig. 1 A-D) and by the presence of a brood pouch in adult females (Fig. 1 A, marsupium).

Most species are more or less colourless, even transparent, but they have a few, relatively large, chromatophores (pigment spots). Some are more heavily pigmented than others; a few may be bright green or deep red. Whatever the colouration, it is too variable and unreliable to be a guide to identification. The stalked compound eyes are always conspicuous; the faceted corneal part (Fig. 1 G) is composed of the closely packed lenses of the many visual units (the ommatidia). In life, the eye tends to be shining and reflective, often golden yellow with a black optical axis. In preserved specimens, it goes dark.

The typical swimming movement of these animals is a gentle gliding induced by the fringed natatory exopods of the thoracic limbs (Fig. 1 D, E). These curve up outside the carapace and maintain a rythmic beat. The endopods of the same limbs can be used for walking. Movement can also be produced by the pleopods, where these are fully developed, as in Fig. 1 B. If the animal is alarmed, a sudden flicking of the tail fan results in a violent backwards "escape reaction".

The thoracic limbs are also involved in the animals' respiration and feeding, by maintaining a flow of water and directed currents. The main respiratory stream is drawn forwards beneath and out of the carapace by a small paddle-like process near the base of the first thoracic limb. The usual method of feeding depends on currents set up by the action of the thoracic exopods, carrying fine suspended matter in the water to the mid-ventral line. From there it is drawn forwards, filtered by the maxillae and then passed to the mouth.

Although their limbs are neither chelate nor strong, most Mysids will also seize small living animals, such as copepods, which are chewed while held against the mouthparts. Quite large pieces of animal or vegetable matter are tackled in this way, rejecting skeletal or other tough parts that do not break up readily. They will feed likewise on moribund members of their own species, though there is no evidence of cannibalism among healthy individuals, despite their gregarious habits.

Adult specimens show pronounced differences between the sexes (sexual dimorphism). Maturing females develop a large ventral brood pouch or marsupium (Fig. 1 A) which encloses the eggs or developing offspring and has given rise to the name "Opossum Shrimps". It consists of thin curved plates (oostegites or brood lamellae) which grow out from the last two or three pairs of thoracic limbs and overlap without fusing. The oviducts open near the bases of the sixth thoracic limbs and the eggs are passed directly into the marsupium.

D. *Gastrosaccus sanctus*. Adult male. Dorsal view. Scale line 5 mm. 1–6, segments of abdomen.
E. *Schistomysis kervillei*. Fourth thoracic leg of right side, anterior view. Scale line 1 mm.
F. Tip of endopod from Fig. E, enlarged. Scale line 0.2 mm.
G. *Praunus flexuosus*. Right eye. Dorsal view. Scale line 1 mm.
H. *Praunus inermis*. Right antennal scale and base of antenna. Dorsal view. Scale line 1 mm.
I. Diagram of Fig. H to illustrate measurements. Scale line same as for H.
J. *Praunus flexuosus*. Telson. Ventral view. Scale line 1 mm.
K. *Praunus flexuosus*. Left endouropod. Ventral view. Scale line 1 mm.
L. *Praunus flexuosus*. Left exouropod. Ventral view. Scale line 1 mm.
M. *Erythrops elegans*. Telson. Ventral view. Scale line 0.1 mm.
N. *Mesopodopsis slabberi*. Telson. Ventral view. Scale line 0.5 mm.

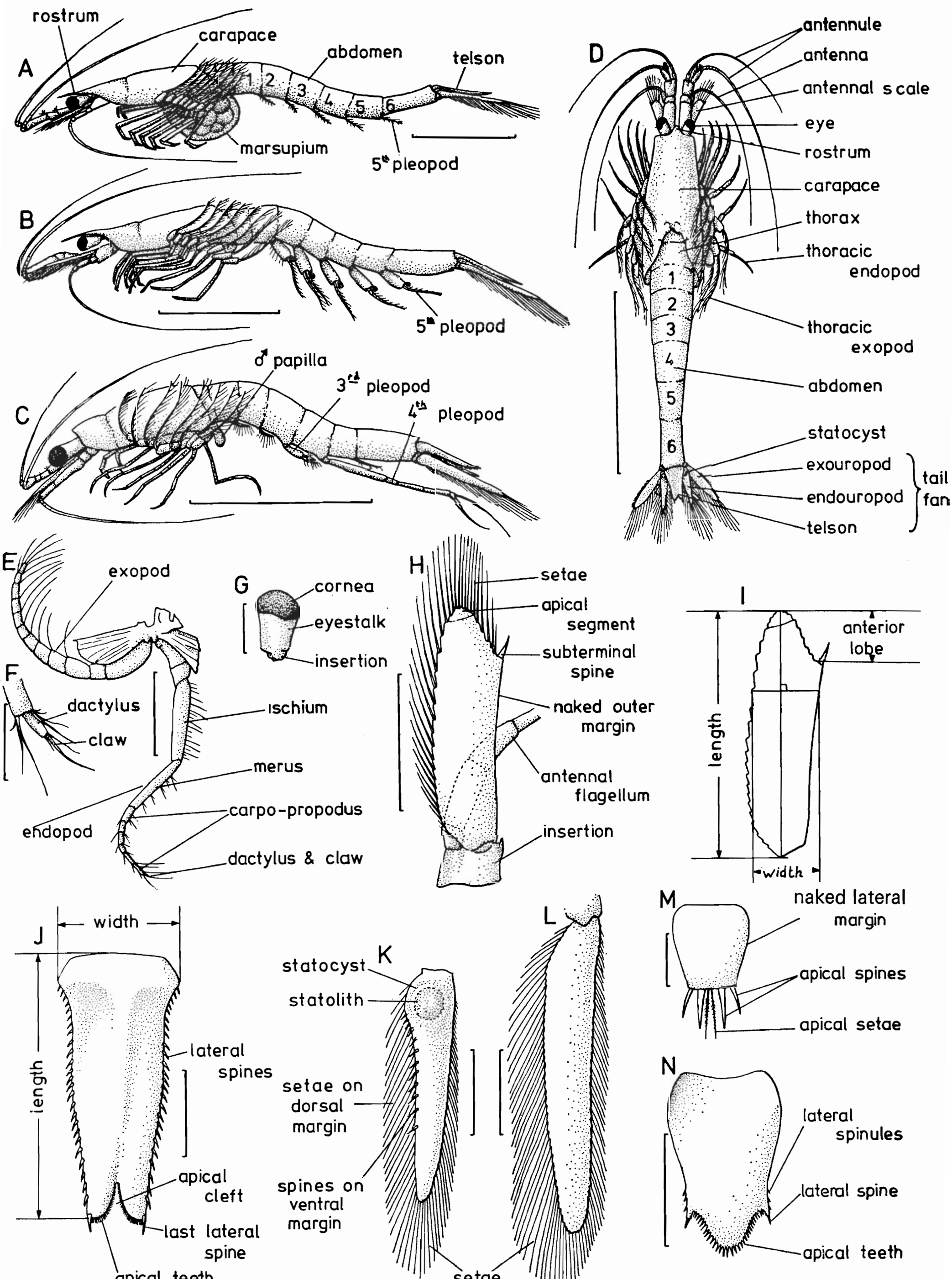

Fig. 1.

General appearance of Mysidae and features referred to in the key.

A. *Siriella armata*. Adult female. Left lateral view. Scale line 5 mm. 1–6, segments of abdomen.
B. *Siriella armata*. Adult male. Left lateral view. Scale line 5 mm.
C. *Schistomysis spiritus*. Adult male. Left lateral view. Scale line 5 mm.

The external sexual openings (gonopores) of the male are on a pair of protuberances developed at the bases of the posterior pair of thoracic limbs (♂ papilla, Fig. 1 C). Besides lacking a marsupium, males are easily recognized in most cases by the form of the pleopods. Whereas those of the females are all reduced to small finger-like processes, the adult males of some genera have at least one pair greatly modified and elongated to assist the mating process (Fig. 1 C). In other genera the males have well developed large biramous pleopods (Fig. 1 B) quite different from those of the female.

Mating and moulting are both normally nocturnal. When breeding actively, the female will release a brood of juveniles prior to a moult and mate immediately after it. There is a definite pattern of mating behaviour in which the male sheds sperm either into the marsupial chamber or so close that it is carried there by water currents set up by the mating pair. The next batch of eggs is then released into the chamber from the oviducts.

There is no larval stage. Early development takes place within the marsupium until the juveniles are released as miniature versions of the adults, lacking the secondary sexual characters which appear much later. At first they are more slender and delicate than adults, with appendages bearing relatively longer, fewer, spines. Juveniles and adults are commonly found in the same areas, with similar habits.

ECOLOGY

Mysids may be seen swimming slowly or caught amongst weeds in pools but they prefer open water, either the channels (sometimes quite small ones) of an estuary, or the sea itself. They seem to avoid still, shallow water unless stranded there by the tide. During the day, they swim near the bottom, cling to weed or rocks, or burrow into a soft substratum. At night, most species move up towards the surface and may then be caught in a plankton net. This nocturnal migration causes considerable differences between collections made by day and night. Sampling is also complicated by their pronounced tendency to form aggregations of various kinds and by tidal and seasonal horizontal migrations.

Species which occur close inshore can all tolerate some variation in salinity. *Praunus flexuosus*, common in docks and estuaries, has been found in lagoons of widely fluctuating salinity (e.g. Williams, 1972). *Neomysis integer*, characteristically associated with brackish water, often swarms in estuaries, and has been known to persist in lagoons cut off from the sea which have become virtually fresh, with some freshwater fauna. One species, *Mysis relicta*, occurs only in freshwater in this country as a glacial relict, though it has been found in brackish water abroad.

Breeding seasons vary between the species, temperature being the major control. A summer peak is usual in British waters, though, if the conditions are right, breeding may continue throughout the year. The development of the embryo is rapid enough for a female to produce several broods in a season. The young may mature and breed quite soon, or develop more slowly and not breed until the next season. Sexual maturity is attained before growth is completed, smaller females producing smaller broods than the older, larger ones. The life-span is about a year.

Mauchline (1965–1971) gives details of the population biology of a number of species. The older literature is summarized by Tattersall and Tattersall (1951).

The Plymouth Marine Fauna (Marine Biological Association, 1957) and other local fauna lists give some idea of distribution and abundance around the country.

Collection and Preservation

General collections on the shore, even at low water, often fail to include Mysids even though there may be an abundant population in the area because the methods used and the sites investigated may not be appropriate for these animals. Small nets tend to miss them, push-nets have too large a mesh, and Mysids do not often appear in daytime surface plankton hauls. Nevertheless, when push-nets are operated at low tide, large numbers may be caught up amongst weed and debris.

The best compromise between losing small specimens through a coarse mesh and creating too much back-wash with a fine one is to collect Mysids from the shore by scraping the bottom with a push-net with a mesh of about 1 mm.

In estuaries, where there are often dense swarms, vast numbers may be taken simply by holding a hand-net in the current. From a boat, a net just running along the bottom will be suitable for daytime work. At night, oblique hauls, in which the net traverses the whole depth of water from bottom to top, are ideal for obtaining the maximum variety. They may also be attracted to a light.

Specimens are killed by adding 40% formalin to the sea water. A 4% solution in a clean tube will serve as a preservative. Alternatively they may be washed in fresh water to remove the salt (which precipitates in strong alcohol) before being preserved and examined in 70% alcohol. Alcohol is less unpleasant to work with than formalin and spirit-hardened specimens are less liable to break up. Other preservatives such as 0·2% Nipastat or 1% propylene phenoxetol used after fixation, tend to make the specimens fragile.

Identification

As there is no larval stage, the key may be used for young specimens as well as adults of both sexes. However, experience is needed for the identification of small juveniles, due to the changes accompanying growth. As a general rule, specimens less than about 5 or 6 mm long should be treated with caution, bearing in mind that this represents an earlier stage for large species than for small ones.

The key is based on, but substantially modified from, the work of Tattersall and Tattersall (1951) which should be consulted for much valuable additional detail and for confirmatory descriptions. The 29 species included here are those for which there are records from depths of less than 20 m. *Paramysis helleri* has been replaced by *P. nouveli* (Labat, 1953) and *Gastrosaccus lobatus* (Nouvel, 1951) has been added. *Siriella brooki* is treated as a variety of *S. jaltensis*. The dubious *Siriella gordonae* is ignored. *Mysis relicta* is known in Britain only from freshwater, so is not included. More than 45 other species live in deep water.

Some species can often be recognized in the field by characteristics such as size, colour, habits, habitat and general appearance, but these are inconstant and subjective and so unsuited to a key. Even colour cannot be relied upon.

Microscopical examination of dead specimens under a good high-powered stereomicroscope (up to ×50 or more) and a bright focusing incident light is necessary for certain identification. Some characters may be seen more easily by transmitted light, so both systems should be tried. Optical quality and lighting are as important as magnification because some of the characters are rather obscure and liable to confusion.

Precise adjustment of the light source is very important when examining, for instance, the spines on the endouropod. Ideally the appendage should be seen against a dark background, with the focused light beam at a very low angle to it and nearly at a right-angle to the axes of the spines. Sometimes it is desirable to supplement this with an ordinary monocular microscope for the examination of small parts in a wet mount on a glass slide. In any case, a certain amount of manipulation is needed to separate and examine overlapping parts; initially it may be easiest to spread them out by removing them from the animal.

NOTES ON THE KEY

1. It is often difficult to base a determination on a single character. All mentioned in a couplet should be examined. Remember that appendages can be damaged and regenerate in a modified form and that aberrations occur, such as the doubling of a spine.
2. The spines on the inner margin of the endouropod provide a most useful character but are difficult to see clearly because the margin is thick with a dorsal and a ventral edge (Fig. 1 K). The appendage should be examined upside down, as in the figure, as the spines are on the ventral edge. They will then be seen against a background of the setae borne on the dorsal edge. When the tail fan is not spread out, these spines are also overlapped by the setae on the inner edge of the exouropod.
3. Some characters are minute; for example, some species of *Siriella* are separated by the structure of small apical spines on the telson (Fig. 2 X, Y) and there are two plumose apical setae there which can create misleading impressions. Careful high-power examination is easiest with the telson detached and mounted in a drop of water.
4. Identification of the three species of *Praunus* is helped by their chromatophores, at least in typical examples. These widely branching cells are easily distinguished if the pigment is in the concentrated state, when each one looks like a separate dark dot. If the pigment is in the dispersed condition they are more difficult to make out.

Mauchline (1971*d*) reports that *P. flexuosus* and *P. neglectus* from W. Scotland cannot be separated by their chromatophores. In material from the S.W. coast, I have likewise found variation in the chromatophores of the tail fan, but not in the ventral thoracic ones, of which *P. flexuosus* has eight pairs and *P. neglectus* three.

Key to Coastal Species of British Mysidae

1. Telson (excluding spines) with apical cleft, i.e. distinctly notched or bifid at apex (Figs. 1 D, J; 2U. Note that some species have a smaller cleft than these) — 2
   Telson without apical cleft, more or less rounded, pointed, or truncate but not notched at the apex (Figs. 1 M, N; 2 V-Z) — 18
2. Exouropod with spines, not setae, on outer margin. *Gastrosaccus* and *Anchialina* (Figs. 1 D; 2 N, O) — 3
   Exouropod with setae, not spines, on outer margin (Fig. 1 L) — 7
3. Fifth abdominal segment rather narrow when seen from above. From the side it shows a dorsal ridge and a spine-like median dorsal process at its posterior margin (Fig. 2 K) — *Gastrosaccus spinifer*
   Fifth abdominal segment may be narrowed as described above, but without a dorsal ridge or median dorsal process (Fig. 1 D) — 4
4. Telson armed with 20 or more lateral spines on each side. Outer margin of exouropod with 20 or more relatively small spines (Fig. 2, O). Dorsal posterior margin of carapace straight (Fig. 2 L) — *Anchialina agilis*
   Telson armed with up to 14 lateral spines on each side. Outer margin of exouropod with 15 or less, relatively massive, spines (Fig. 2 N). Dorsal posterior margin of carapace deeply concave (Fig. 1 D) — 5

5. Fifth abdominal segment narrow; nearly or quite as narrow as the sixth segment (Fig. 1 D). Telson about twice as long as broad, with 5 or 6 large lateral spines on each side *Gastrosaccus sanctus*

Fifth abdominal somite not as narrow as the sixth. Telson about 3 times as long as broad, with 8 or more lateral spines on each side 6

6. Posterior margin of carapace with small lobes turning upwards and forwards as in typical *G. sanctus* (Fig. 1 D) *Gastrosaccus lobatus*

Posterior margin of carapace with no such lobes *Gastrosaccus normani*

7. Antennal scale with setae all round (similar to Fig. 2 I, J). *Heteromysis* and *Mysidopsis* 8

Antennal scale with a rather long smooth and naked outer margin (Figs. 1 H; 2 A-H). Remainder of edge, medial to this, bears setae 9

8. Apical cleft of telson with teeth inside. Endopod of third thoracic limb short and stout, with a prehensile terminal claw *Heteromysis formosa*

Apical notch in telson without teeth or setae, smooth-edged inside. Endopod of third thoracic limb normal, like the others *Mysidopsis angusta*

9. The smooth naked outer margin of antennal scale, about half the length of the scale, not ending in a spine, running smoothly into the setose part (Fig. 2 H). Telson has lateral spines restricted to the apical half. Eyestalk very short, shorter and smaller than the large black corneal part of the eye. Fresh specimens usually of a red colour *Hemimysis lamornae*

The smooth naked outer edge of antennal scale ending in a small subterminal spine (Figs. 1 H; 2 A-G). Telson has lateral spines from base to apex (as in Figs. 1 J; 2 U). Eyestalk may be small but in most cases as large as corneal part of eye (Fig. 1 G). Fresh specimens not normally red 10

10. Antennal scale rather parallel-sided, with short anterior lobe (see Fig. 1 I). Anterior lobe projecting only slightly forwards beyond base of subterminal spine, by twice the length of the spine or less (Figs. 1 H, I; 2 A, B). Base of spine weakly constricted or articulated when seen under high magnification (Fig. 2 B). Corneal part of eyes carried beyond carapace. *Praunus* 11

Antennal scale broad, ovate, with moderate anterior lobe (Fig. 2 F, G); or narrow and elongated with long anterior lobe (Fig. 2 C-E). Anterior lobe projecting forwards well beyond base of subterminal spine, by at least twice the length of the spine. Base of spine with no trace of constriction or articulation (Fig. 2 D). Corneal part of eyes not reaching much beyond carapace (except in *Schistomysis spiritus*, Fig. 1 C, which has anterior lobe of antennal scale several times longer than the subterminal spine Fig. 2 C). *Paramysis* and *Schistomysis* 13

11. Antennal scale about 4 times as long as broad, anterior lobe about twice as long as subterminal spine (Fig. 1 H, I). Eyestalk looks slightly wider than long. Telson with 15–17 lateral spines. The series of chromatophores along the ventral mid-line of abdomen consists of only one on each segment. Two chromatophores on telson, one on each blade of uropod. Living specimens red-brown to almost colourless *Praunus inermis*

Antennal scale prominently long and strap-like; at least 5 times as long as broad, anterior lobe less than twice as long as subterminal spine (Fig. 2 A, B). Eyestalk looks slightly or distinctly longer than wide. Telson with 18–28 lateral spines. The series of chromatophores along the ventral mid-line of abdomen consists of 2 on each segment. Four or more chromatophores on telson, several on each blade of uropod. Living specimens blackish, grey-brown or greenish to almost colourless 12

12. Antennal scale only 5 or 6 times as long as broad, anterior lobe slightly longer than subterminal spine (Fig. 2 A, B). Telson with 18–24 lateral spines. Only three pairs of chromatophores on the ventral surface of thorax, between the legs. Usually four chromatophores on telson and each exouropod, two on each endouropod. Living specimens almost colourless or pale to dark green *Praunus neglectus*

Antennal scale 7–8 times as long as broad, anterior lobe at most as long as subterminal spine. Telson with 22–28 lateral spines (Fig. 1 J). A separate pair of chromatophores on the ventral surface of each thoracic segment, between the legs. Usually more than 4 chromatophores on telson and 4 or more on each exouropod, 3 or 4 on each endouropod. Living specimens blackish, grey-brown or yellowish to almost colourless *Praunus flexuosus*

13 Eyestalk longer than wide, like a slightly tapering cylinder, so that the eyes are carried appreciably beyond the margin of carapace (Fig. 1 C). Distal third of endouropod very slightly incurved (Fig. 2 Q) *Schistomysis spiritus*

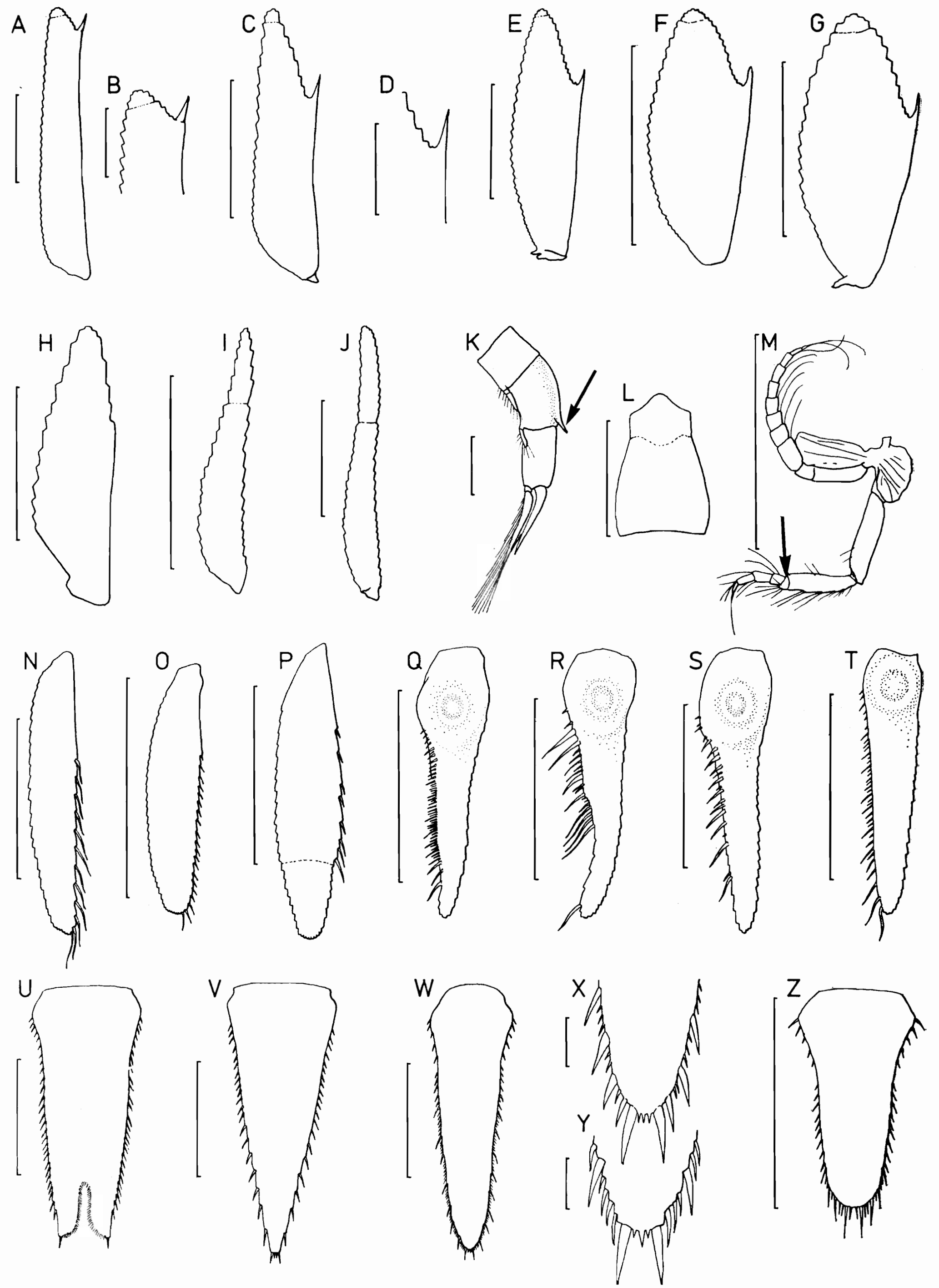

FIG. 2.

Examples of features referred to in the key. Note that spines, where present, have been included in these drawings but setae have been omitted. Where setae are present on an appendage, their basal sockets form small step-like indentations of the margin which will indicate their position, as may be seen by comparison with Fig. 1. All scale lines 1 mm except for B, D, G (0.5 mm) and X, Y (0.1 mm).

Eyestalk no longer than its width, the eyes therefore not reaching appreciably beyond lateral margins of carapace. Endouropod either straight or with distal third incurving markedly (Fig. 2 R, S) 14

14 Distal third of endouropod incurving markedly (Fig. 2 R). Spines absent from inner margin of this part, which bears only setae, but strong spines proximal to it and one on the apex *Schistomysis parkeri*

Endouropod straight. Spines along most of its inner margin from near base to near apex (similar to Fig. 2 S) 15

15 Antennal scale more than three times as long as broad (Fig. 2 E). Telson of adult with more than 24 lateral spines on each side (Fig. 2 U). Eyestalk, when seen from above, almost or quite as large as corneal part of eye (shrinkage of the tissues away from the cuticle may make the eyestalk look smaller). Combined carpo-propodus of thoracic endopods divided into 5–6 sub-segments (Fig. 1 E). The most basal one of these normal, longer than the following sub-segment, as in Fig. 1 E 16

Antennal scale ovate, less than three times as long as broad (Fig. 2 G). Telson of adult with less than 24 lateral spines on each side. Eyestalk seen from above is only about half as big as corneal part of eye. Combined carpo-propodus of thoracic endopods divided into 4–5 sub-segments. The most basal one of these short, shorter than the following sub-segment and very slightly bulbous (often difficult to see Fig. 2 M) *Paramysis* 17

16 Subterminal spine of antennal scale little more than half way along total length of scale. Spines on inner margin of endouropod extending, though sparsely, almost to apex and increasing steadily in size from base to apex. Telson with about 26 lateral spines, evenly spaced, the last one not particularly separated from the others *Schistomysis ornata*

Subterminal spine of antennal scale at about $\frac{2}{3}$ of the total length of scale from base (Fig. 2 E). Spines on inner margin of endouropod irregular in size near the base, including both long and short ones, and stopping well short of apex (Fig. 2 S). Telson with about 30 lateral spines, a disproportionate gap between the last lateral spine and the preceding series (Fig. 2 U) *Schistomysis kervillei*

17 Cleft of telson relatively wide and shallow; depth 1 to $1\frac{1}{2}$ times width across mouth i.e. between the pair of last lateral spines. Inner margin of endouropod bears 13–18 spines in an irregular row, not nearly reaching apex. Telson with 13–18 lateral spines on each side *Paramysis nouveli*

Cleft of telson rather deep; about $1\frac{1}{2}$ times as deep as its width across mouth, i.e. between the last lateral spines. Inner margin of endouropod bears about 28 spines, a few of which are much larger than the others, in a row extending almost or quite to apex. Telson with 17–23 lateral spines *Paramysis arenosa*

A. *Praunus neglectus*. Right antennal scale. Dorsal view.
B. Part of Fig. A enlarged to show structure of subterminal spine.
C. *Schistomysis spiritus*. Right antennal scale. Dorsal view.
D. Part of Fig. C enlarged to show structure of subterminal spine.
E. *Schistomysis kervillei*. Right antennal scale. Dorsal view.
F. *Schistomysis parkeri*. Right antennal scale. Dorsal view.
G. *Paramysis arenosa*. Right antennal scale. Dorsal view.
H. *Hemimysis lamornae*. Right antennal scale. Dorsal view.
I. *Leptomysis lingvura*. Right antennal scale. Dorsal view.
J. *Leptomysis mediterranea*. Right antennal scale. Dorsal view.
K. *Gastrosaccus spinifer*. Last three segments of abdomen. Left lateral view.
L. *Anchialina agilis*. Carapace. Dorsal view.
M. *Paramysis arenosa*. Seventh thoracic leg of left side. Postero-lateral view.
N. *Gastrosaccus sanctus*. Left exouropod. Ventral view.
O. *Anchialina agilis*. Left exouropod. Ventral view.
P. *Siriella clausii*. Left exouropod. Ventral view.
Q. *Schistomysis spiritus*. Left endouropod. Ventral view.
R. *Schistomysis parkeri*. Left endouropod. Ventral view.
S. *Schistomysis kervillei*. Left endouropod. Ventral view.
T. *Siriella clausii*. Left endouropod. Ventral view.
U. *Schistomysis kervillei*. Telson. Ventral view.
V. *Neomysis integer*. Telson. Ventral view.
W. *Siriella armata*. Telson. Ventral view.
X. *Siriella clausii*. Apex of telson more highly magnified than W. Ventral view.
Y. *Siriella jaltensis*. Apex of telson more highly magnified than W. Ventral view.
Z. *Leptomysis lingvura*. Telson. Ventral view.

18 Telson of characteristic shape: short, apex rounded, with numerous small teeth, and flanked on each side by an angular shoulder bearing a strong spine (Fig. 1 N). Eyestalks conspicuously long, cylindrical *Mesopodopsis slabberi*

Telson of some other form, without prominent shoulders (Figs. 1 M; 2 V-Z). Eyestalks not exceptionally long 19

19 Apex of telson truncate, either narrowly or broadly (Figs. 1 M; 2 V). Telson as a whole long, narrowing steadily towards the apex which is almost pointed (Fig. 2 V); or short and strongly truncated, almost trapezoidal (Fig. 1 M). *Neomysis* and *Erythrops* 20

Apex of telson rounded (Fig. 2 W-Z) 21

20 Telson long, sides becoming straight towards the apex, which is narrow, almost pointed (Fig. 2 V). Antennal scale setose all round (similar to Fig. 2 I, J) *Neomysis integer*

Telson short, strongly truncated, almost trapezoidal (Fig. 1 M). Antennal scale with naked outer margin (similar to Fig. 1 H) *Erythrops elegans*

21 Exouropod divided (by a weak suture) into a shorter distal segment and a longer proximal portion (Fig. 2 P). Outer margin of proximal portion bearing spines, distal segment with setae instead of spines. (The suture may be obscure, but the division into distal and proximal portions is evident from the shape and armature of the exouropod). *Siriella* 22

Exouropod not divided, setose all round (similar to Fig. 1 L) 25

22 Rostrum long, tapering; normally projecting forwards beyond anterior margin of eyes; reaching second basal segment of antennule (Fig. 1 A, B: shorter in juveniles). Eyestalk elongated, carrying eyes beyond lateral margins of carapace (Fig. 1 A, B). Telson with four or five (rarely 3) small equal apical spines between the two large last lateral ones (Fig. 2 W). Exouropod rather long and parallel-sided, endouropod slightly incurving. Antennal scale long and almost parallel-sided *Siriella armata*

Rostrum short; not, or barely, reaching anterior margin of eyes; reaching almost to middle, or less, of first basal segment of antennule (similar to Fig. 1 D). Eyestalks short and broad, not longer than wide. Telson with three small apical spines between the two large last lateral ones (Fig. 2 X, Y). Exouropod with slightly convex margins (Fig. 2 P). Endouropod straight (Fig. 2 T). Antennal scale sub-ovate 23

23 The three small apical spines of telson equal, or nearly so (Fig. 2 X). Length of distal segment of exouropod about 1½ times its breadth (Fig. 2 P). Inner margin of endouropod armed with a series of large spines, all but the distal 3 or 4 of these having smaller spines between them (Fig. 2 T) *Siriella clausii*

The three small apical spines of telson forming a trident, consisting of two very small ones flanking a larger median one (Fig. 2 Y). Length of distal segment of exouropod about twice its breadth. Inner margin of endouropod having small spines between the large ones either restricted to the basal region or continuing to the apex 24

24 Outer margin of exouropod with 9–16 spines. Spines on inner margin of endouropod forming a fairly regular series graduated in size from base to apex, with smaller ones interspersed near the base only *Siriella jaltensis*

Outer margin of exouropod with 15–23 spines. Spines on inner margin of endouropod forming two series; one of larger spines, the other of shorter, more numerous spines between the longer ones, to the apex *Siriella norvegica*

25 A dorsal finger-like process on eyestalk, projecting outwards over edge of corneal part of eye. Two large median dorsal humps on carapace. Telson short, not much longer than its maximum width; armed with up to 18 very short lateral spines on each side *Mysidopsis gibbosa*

No finger-like process on eyestalk, no humps on carapace. Telson more than twice as long as wide, armed with 20 or more lateral spines, which may be of varying size, on each side (similar to Fig. 2 Z) *Acanthomysis* and *Leptomysis* 26

26 Telson without lateral spines on basal third, except for one or two near base. Distal two-thirds strongly spinose. Endouropod with few spines near base on inner margin; apical half without spines *Acanthomysis longicornis*

Telson with lateral spines from base to apex (Fig. 2 Z). Inner margin of endouropod spinose from near base to apex. *Leptomysis* 27

27. Integument microscopically scaly, looks bristly. A notch in carapace on each side of base of rostrum. Rostrum with a slight convexity on each side behind the tip *Leptomysis gracilis*

Integument normal, smooth. No notches in carapace near base of rostrum. Edges of rostrum normal, more or less concave all along 28

28. Apical segment of antennal scale (best distinguished under rather low magnification) bears 10 setae or more on each side (best seen under high magnification) (Fig. 2 J). Rostrum relatively long, extending almost the whole length of the first basal segment of antennule *Leptomysis mediterranea*

Apical segment of antennal scale bears 6 setae or less on each side (Fig. 2 I). Rostrum short, extending only half way along first basal segment of antennule *Leptomysis lingvura*

Systematic list of genera and species in the key

The size indicated in each case is the maximum length, measured from the anterior margin of the carapace (excluding the rostrum) near the insertion of the eyestalks, to the tip of the telson. An alternative measurement used by some workers is from the base of the eyestalk to the tip of the extended uropods, increasing the figure by about 5%.

Siriella Dana, 1850. Fig. 1 A, B; 2 P, T, W, X, Y.

Moderate to fairly large size (11–22 mm). Rostrum may be long or short, but strong and pointed. Eyes prominent on well developed eyestalks. Antennal scale with naked outer margin and strong subterminal spine. Pleopods of female reduced to small, simple, setose digits. Male pleopods fairly large, biramous. Divided exouropod characteristic of the genus. Telson armed with many short and long lateral spines, with a few short apical ones at the rounded tip providing useful specific characteristics. Usually pale and transparent.

Siriella armata (M.-Edw.) Fig. 1 A, B; 2 W.

22 mm. Large but moderately slender. Easily identified by the rostrum, which is greatly produced, gently arcing over bases of eyestalks, its slender pointed tip extending forwards beyond eyes (shorter in juveniles). Eyestalks noticeably long, the eyes prominent. Exouropod long, proximal part parallel-sided. Endouropod narrow and tapering, inner margin armed with a regular series of spines. Telson nearly always has 4 (rarely 3 or 5) small equal apical spines between the two large last lateral ones.

Swims near the bottom; littoral to 20 m. Common.

Siriella clausii G.O. Sars. Fig. 2 P, T, X.

11 mm. Smaller than *S. armata*, general form similar. Eyestalks short. Rostrum short. Three small apical spines of telson all the same size. Very rarely there are four of these spines, as in *S. armata*. Exouropod rather broad. Spines arming inner margin of endouropod arranged in series of smaller ones between larger ones.

Swims near the bottom, distinctly littoral but extending to 30 m. Generally common.

Siriella jaltensis Czerniavsky. Fig. 2 Y.

15 mm. Similar to *S. clausii* but the small apical spines on telson unequal, forming a trident, and the spines arming inner margin of endouropod form a uniform series.

The var. *brooki* was at one time considered specifically distinct but Tattersall and Tattersall (1951) consider both this and *S. gordonae* Zimmer to be forms of *S. jaltensis*.

Occurs with *S. clausii* but extends into much deeper water.

Siriella norvegica G.O. Sars.

21 mm. Like *clausii* but can grow much larger. The three apical spines of telson form a trident, as in *S. jaltensis*, but spines arming inner margin of endouropod form two unequal series as in *clausii*.

Seldom littoral. Extends to 200 m. Rare.

Gastrosaccus Norman, 1868. Fig. 1 D; 2 K, N.

Moderate size. Appearance more shrimp-like than most Mysids, due to relatively stout thoracic region compared with narrowness near middle of abdomen. Eyes look relatively smaller than in most other genera. Rostrum slight. Antennal scale with naked outer margin and subterminal spine; anterior lobe short. Marsupium formed partly from anterior abdominal pleura. Female pleopods small. Male pleopods well developed, biramous; third pair with very elongate exopod. Spines on outer margin of exouropod are distinct but need careful scrutiny and do not extend to base. Few long spines on inner margin of endouropod. Telson rather straight-sided, armed with up to 11 stout lateral spines on each side.

The posterior margin of the carapace is often curiously ornamented, with little upturned lobes as in *G. sanctus* or a slight fringe as in *G. spinifer*. *G. normani* has neither of these and what was regarded as a variety with lobes has been distinguished as a new species, *G. lobatus*, by Nouvel (1951). Both *G. sanctus* and *G. lobatus* have forms with reduced lobes or none.

Gastrosaccus sanctus (van Beneden). Fig. 1 D; 2 N.

15 mm. Narrowing of abdomen fairly pronounced. Carapace posteriorly deeply concave; small upturned lobes on this margin rarely absent. Only 6 large lateral spines on each side of telson.

Burrows in mud or sand close inshore. More or less uncommon in the south, rarer northwards, to Scotland.

Gastrosaccus normani G.O. Sars.

11 mm. Smaller than *G. sanctus*, abdomen much less narrowed. Rostrum very short. Posterior margin of carapace without lobes. Telson more elongated, with 9 or 10 lateral spines.

Bottom living, mostly offshore. A Southern sp., but recorded from Scotland.

Gastrosaccus lobatus Nouvel.

11 mm. Typical form distinguished from *G. normani* by the presence of lobes on the posterior margin of the carapace although there are other characters on which the species was described. Telson with 9 or 10 lateral spines.

There is a variety *armata* (not reported from Britain) in which the lobes on the posterior margin of the carapace are reduced (females) or absent (males). The telson bears 11–14 lateral spines instead of the 9 or 10 for typical *lobatus* and *normani*

Habits as *G. normani*. The two species occur together at Plymouth, *lobatus* being commoner inshore (O. S. Tattersall, 1957). Distribution southerly, limits not clear.

Gastrosaccus spinifer (Goës). Fig. 2 K.

21 mm. Immediately recognizable by the narrowed abdomen with dorsally ridged fifth abdominal segment ending in a finger-like spine. Posterior concavity of carapace with a slight fringe and minute lobation.

Bottom living, from close inshore to deep water. Fairly common, all areas.

Anchialina Norman & Scott, 1906.

Anchialina agilis (G.O. Sars). Fig. 2 L, O.

9 mm. General appearance somewhat shrimp-like, as in *Gastrosaccus*, but to a lesser degree. Recognizable by the relatively short, stout appearance and rather large carapace with straight hind margin. Rostrum well developed, triangular, pointed. Eyes of moderate size, red to brownish. Antennal scale small, ovoid, with naked outer margin and subterminal spine. Females with very characteristic pleopods, much reduced to small angular plates. Those of male well developed, natatory. Spines on outer margin of exouropod finer than in *Gastrosaccus*, needing close examination. Endouropod distinctly longer than exouropod; with many short and long spines on inner margin. Telson rather straight-sided, large; lateral spines fine, numerous. More or less transparent.

Normally near the bottom, swims actively. Shallow water to 100 m. Not usually taken from the shore except in night plankton. All areas.

Erythrops G.O. Sars 1869.

Erythrops elegans (G. O. Sars). Fig. 1 M

6 mm. May be sexually mature at 5 mm. The only one of 5 British species (of *Erythrops*) to occur in shallow water. *E. serrata* (11 mm), which might be taken rarely has the naked outer margin of antennal scale strongly saw-toothed. Living specimens of the genus have bright red eyes which fade in spirit. Corneal part of eyes prominent, wider than eyestalk, dorso-ventrally compressed, thus appearing elongated laterally; with distinct individual ommatidia. Rostrum virtually absent, blunt. Subterminal spine of antennal scale strong, small anterior lobe. Thoracic endopods long and slender. Male pleopods well developed, natatory. Female pleopods reduced, simple. Uropods extend far beyond

short telson. Shape and armature of telson characteristic; no lateral spines, a pair of plumose apical setae medially between the apical spines. Body transparent, with bright pigment spots.

At the bottom, on mud, sand or shell gravel. Sublittoral. Generally distributed, but not likely to occur very commonly.

Leptomysis G. O. Sars 1869. Fig. 2 I, J, Z.

Moderately sized animals (15–20 mm). Rostrum fairly short, pointed. Smoothly rounded telson, with numerous, close, small and large spines from base to apex, lateral and apical spines not clearly separable, forming a continuous series. Antennal scale narrow, setose all round. The division of this into apical and basal segments may be difficult to detect but provides the best way of characterizing *L. mediterranea* and *L. lingvura*. Female pleopods reduced, small, slender; male pleopods strongly developed, natatory. Body pale or translucent with some pigmentation, or may be coloured reddish.

Leptomysis gracilis (G. O. Sars)

15 mm. Integument minutely scaled all over, appearing hispid (see also *Acanthomysis longicornis*). Rostrum triangular, sides bulging near the middle, with a notch in the carapace near the base on each side. Apical segment of antennal scale with 6 setae or less on each side. Telson usually with a slight but characteristic constriction at the base of a pair of large spines near the apex. Perhaps these are thus equivalent to the last lateral spines.

Near the bottom or somewhat pelagic. Tends to keep away from the shore, in moderate depths, but also in estuaries.

Leptomysis mediterranea G. O. Sars. Fig. 2 J.

18 mm. Structurally very similar to *L. gracilis* but with a smooth integument and a simple rostrum without notches in the carapace. Apical segment of antennal scale with 10 or more setae on each side.

On or near the bottom, in shallow water, from tidal to deeper levels. A southern species, extending to Scotland only adventitiously.

Leptomysis lingvura (G. O. Sars). Fig. 2 I, Z.

17 mm. Very similar to *L. mediterranea*, but distinguished by the apical segment of antennal scale having 6 setae or less on each side. Rostrum distinctly shorter than in the other two spp. Often coloured reddish.

Littoral or at the bottom in shallow water. Common.

Mysidopsis G. O. Sars, 1864.

The only two species in shallow water are *M. angusta* and *M. gibbosa*. Antennal scale slender or of moderate width, setose all round. Rostrum short, almost lacking. Eyes large; a distinct dorsal finger-like process extending from eyestalk partly over cornea. Female pleopods small, simple; male pleopods large, natatory. Exouropod very large compared with endouropod. Apex of telson rounded, truncate; or notched, according to species. A strong pair of black pigment spots at base of telson. General appearance somewhat short and thick compared with other genera. Rather small.

Mysidopsis angusta G. O. Sars.

9 mm. Endouropod small compared with exouropod, but base very swollen, with large statocyst; a single strong spine on inner margin. Telson distinctive; small, dorsally concave, sub-triangular, apex distinctly notched, the notch having smooth unarmed edges. About 15 lateral spines along each margin of telson. Colour slightly unusual, translucent above, purplish below.

Shallow water, from Southern waters to Scotland. Not common.

Mysidopsis gibbosa G. O. Sars.

7 mm. Abdomen strongly curved, giving the body a more marked sigmoid shape in lateral view than other Mysids. Carapace rather short, of uneven form, with prominent anterior and posterior mid-dorsal humps. Telson short, deeply concave and scoop-shaped dorsally, smoothly rounded at the tip with a prominent pair of apical spines and small lateral ones. Pigmentation variable, usually dark.

Near the bottom in shallow water. Southern areas to Scotland.

Hemimysis G. O. Sars, 1869.

Hemimysis lamornae (Couch). Fig. 2 H.

13 mm. Rather small, very short rostrum. Antennal scale moderately broad, with basal half of outer margin smooth, no spine marking the end of this part, which passes directly into the setose part. Eyes very large, black and prominent; borne on smaller eyestalks. Female pleopods very small, simple. Male pleopods rather small, fourth pair with greatly elongated exopod, armed distally with 2 very long setae. Colouration distinctive, bright or dark red.

Bottom living, avoiding light, usually among rocks and weed. From close inshore to >100 m. All areas, but not common. Found in some marine aquaria, where it breeds freely.

Paramysis Czerniavsky, 1882. Fig. 2 G, M.

Rostrum very short or practically wanting. Antennal scale ovate with rather large apical lobe and strong subterminal spine. Under high magnification this has no trace of articulation at its base. Eyes rather large but stalks short so project only slightly. Combined carpo-propodus of thoracic endopod divided into 4–5 sub-segments. The basal one shorter than the following sub-segment and very slightly swollen (may be hard to see). Female pleopods very small, simple. Male pleopods not much larger, but fourth pair with elongated exopod bearing two very long claw-like distal setae.

P. helleri was recorded as British until Labat (1953) described *P. nouveli* and *P. bacescoi* as new species to be distinguished from it. The British specimens appear to be *P. nouveli*, true *helleri* being found farther south and in the Mediterranean.

Paramysis arenosa (G. O. Sars). Fig. 2 G, M.

10 mm. Eyestalks small and short. Inner margin of endouropod armed with up to 30 short and long spines to apex. Telson with 17–23 lateral spines on each side, apical cleft relatively deep and narrow. Body transparent with variable superimposed colours.

On sand, from L.W. to 20 m or so. Fairly common, South and West coasts to Scotland.

Paramysis nouveli Labat

11 mm. Very similar to *P. arenosa*. Eyestalks relatively slightly larger. Endouropod with only 13–18 spines on inner margin, stopping well short of apex. Telson with 13–18 lateral spines on each side, cleft more shallow and open. Colouration similar to *P. arenosa*.

Littoral and shallow water. Distribution similar to *P. arenosa* but rare.

Schistomysis Norman, 1892. Fig. 1 C, E, F: 2 C, D, E, F, Q, R, S, U.

Fairly large species. Rostrum short or virtually wanting. Antennal scale ovoid to long and narrow, with naked outer margin, strong subterminal spine and well developed anterior lobe. No trace of articulation at base of subterminal spine. Combined carpo-propodus of thoracic endopods divided into 5–7 sub-segments. The proximal one normal, longer than the following sub-segment. Female pleopods very small, simple. Male pleopods small, fourth pair with elongated exopod bearing two very long distal setae. Telson with 24–30 lateral spines on each side.

Schistomysis spiritus (Norman) Fig. 1 C: 2 C, D, Q.

18 mm. The most easily recognized member of the genus. Body long and slender. Eyes project noticeably beyond the carapace, on cylindrical eyestalks. Antennal scale relatively long and narrow with long anterior lobe. Exouropod long and slender. Endouropod incurving slightly at the tip, inner margin of this part with few spines, but densely spinose more proximally. Glassily transparent except for the eyes, though with chromatophores and may be partly coloured red-brown. Known as the "Ghost Shrimp".

Near the bottom in shallow water and estuaries. Abundant.

Schistomysis parkeri Norman. Fig. 2 F, R.

10 mm. The only species of *Schistomysis* with a broad ovate antennal scale and relatively short anterior lobe. General appearance less slender than *S. spiritus*. Eyestalks moderately short, eyes not extending much beyond carapace. Endouropod characteristic; distal portion distinctly incurved, with a single strong spine at apex; spines on inner margin irregular, absent from incurved portion.

Shallow water. South-West coast including S. Wales (Makings, unpublished), rare.

Schistomysis ornata (G. O. Sars).

19 mm. General appearance somewhat more robust than *S. spiritus*. Anterior lobe of antennal scale relatively longer. Eyestalks much shorter, eyes larger, but not extending much beyond carapace. Typically 5 subsegments in the carpo-propodus of thoracic endopods, followed by a very small dactylus and claw. In *S. kervillei* (q.v.) there are normally 6 such subsegments (Fig. 1 E). Endouropod virtually straight, inner margin with rather sparse (about 16) spines extending to very near apex. Not so transparent as *S. spiritus*, with some variable pigmentation.

Near the bottom from deep water to close inshore, and estuaries, but not extending up to L.W. Common.

Shistomysis kervillei (G. O. Sars). Fig. 1 E, F; 2 E, S, U.

16 mm. Difficult to separate from *S. ornata*. The gap preceding the last lateral spine of the telson seems to be a good character, though not always as distinct as in Fig. 2 U. The position of the subterminal spine, indicating relative lengths of the naked outer margin and anterior lobe of the antennal scale, is usually distinctive, but not entirely reliable. The same is true of the other characters, including the number of subsegments in the carpo-propodus (typically 6 in *kervillei* Fig. 1 E), though collectively they are likely to provide a determination.

Inhabits shallower water than *S. ornata*, extending to L.W. Few records, but they range from Kent to N.W. Scotland and it has been found near Swansea (Makings, unpublished).

Praunus Leach, 1814. Fig. 1 G, H, I, J, K, L; 2 A, B.

Rather large. Rostrum rounded, indistinct. Eyestalks long enough to carry eyes more or less entirely beyond carapace. Antennal scale tending to elongation, naked outer margin extending almost the whole length of the scale. Subterminal spine shows a basal articulation under high magnification. Proximal subsegment of carpo-propodus of thoracic endopods normal. Female pleopods small, simple. Male pleopods small, fourth pair with very elongate exopod terminating in a fine prolongation which is knobbed at the tip. Telson with 15–28 lateral spines on each side, but in all three species the number is considerably smaller in juveniles, increasing with growth. Morphology of the antennal scale is unreliable in young specimens. The chromatophores provide a useful guide as they do not increase with age, so are valid for juveniles. There is much individual variation in the number of chromatophores on the tail fan of *P. flexuosus* and *P. neglectus* but the ventral thoracic ones seem to be constant in number and position (see note 4, p. 582).

Praunus flexuosus (Müller). Fig. 1 G, J, K, L.

25 mm. The "chameleon shrimp". Antennal scale of adult distinct from all other British Mysids except *P. neglectus;* very long and very narrow, parallel-sided; anterior lobe so short as to be almost absent, shorter than subterminal spine. Eyes prominent. Inner margin of endouropod with 6–14 spines, not reaching apex. Telson with 22–28 lateral spines.

Each of the eight thoracic segments has a distinct pair of ventral chromatophores, between the limbs. Their pigment is usually more or less contracted to form eight pairs of prominent black spots in preserved material. The other two species have only two (*inermis*) or three (*neglectus*) ventral thoracic pairs although when expanded they spread along the other thoracic segments.

One median dorsal chromatophore and two median ventral ones on each abdominal segment. Chromatophores of telson and uropods as described in the key. Transparent to almost black, variable. Usually greyish, sometimes yellowish.

Tends to swim slowly near the bottom, head upwards in a vertical position. Littoral pools and shallows, including brackish water. Abundant.

Praunus neglectus (G. O. Sars). Fig. 2 A, B.

21 mm. Very similar to *P. flexuosus*. Antennal scale less elongated, anterior lobe extending slightly beyond tip of subterminal spine. Telson with 18–24 lateral spines. Only three pairs of ventral thoracic chromatophores though if expanded they may look like more. Chromatophores on the abdominal segments as in *P. flexuosus*. Chromatophores of telson and uropods as described in key. Living specimens often bright green, making them instantly recognizable (other species may have green food in the gut).

Mostly associated with weed in shallow water. Common.

Praunus inermis (Rathke). Fig. 1 H, I.

15 mm. A smaller species than the other two but otherwise similar. Antennal scale much less elongated, anterior lobe extending beyond tip of subterminal spine. Eyestalks relatively shorter than in *flexuosus* and *inermis*. Inner margin of endouropod with 5 or 6 spines restricted to proximal region. Telson with 15–17 lateral spines. Best distinguished by its smaller complement of chromatophores: two ventral thoracic pairs, one dorsal and one ventral on each abdominal segment, two on telson, one on each blade of uropod. Pigmentation dark brownish.

Among weed in shallow water. More or less common.

Mesopodopsis Czerniavsky, 1882.

Mesopodopsis slabberi (van Beneden). Fig. 1 N.

15 mm. General appearance very slender and delicate with exceptionally long eyestalks, carapace rather small. Antennal scale long and narrow, with setae all round. Female pleopods very small; male pleopods small, fourth pair elongated, armed distally with two very long setae. Uropods very long compared with the short, stout telson. Form of telson characteristic; the small lateral spinules may be absent. Transparent and colourless.

Swims freely in shallow brackish and estuarine waters, scarce offshore. Common or abundant most areas, apparently rare or absent in W. Scotland (Mauchline, 1971f).

Neomysis Czerniavsky, 1883.

Neomysis integer (Leach). Fig. 2 V.

17 mm. Rostrum distinct, short, pointed. Antennal scale very long and narrow, tapering to a point, with setae all round. Female pleopods small, simple. Male pleopods small, fourth pair much elongated with a terminal pair of long, barbed setae. Endouropod bears a short comb of spines near middle on inner ventral face. Telson long, tapering towards the almost pointed apex. Pale, translucent, some dark brownish pigment.

Occasionally in the open sea, but normally in brackish estuarine water, penetrating practically to the upper tidal limit. Recorded from hypersaline pools through all intermediate concentrations down to fresh water. Reported as persisting for years in pools which have been cut off from the sea and become fresh, with some freshwater animals. Common, often abundant in appropriate conditions.

Acanthomysis Czerniavsky, 1882.

Acanthomysis longicornis (Milne-Edwards).

9 mm. Whole integument typically with minute scales, looking "fuzzy", but development of this feature is variable (see also *Leptomysis gracilis*). Rostrum very short, pointed. Eyes prominent. Antennal scale narrow and tapering, but not quite pointed. Female pleopods small, simple. Male pleopods small, fourth pair elongated but not as long as in the previous species, not quite reaching base of telson, with a terminal pair of unequal barbed setae. Telson long, tongue-shaped, with rounded apex, lateral spines absent from most of basal third, numerous on distal two-thirds. Base of endouropod with statocyst large, in relation to distal portion. Pigmentation sparse, dark brownish.

Near the bottom in moderate depths. Uncommon. A Southern sp. but recorded from Scotland.

Heteromysis Smith, 1873.

Heteromysis formosa Smith.

8 mm. Unusual in structure and habits. General appearance robust, carapace short and broad without distinct rostrum, eyes moderately large but not projecting much beyond carapace. Antennal scale rather small, slightly ovoid, with setae all round. Endopod of third thoracic limb different from all the others, shorter and stouter, with a prehensile terminal claw. Thoracic genital appendage of male large. Pleopods of both male and female all small and simple. Males have median thoracic sternal processes. Uropods relatively short and broad. Inner margin of endouropod with a row of spines extending to apex. Telson with a fairly narrow cleft, toothed within. Lateral spines only along distal half of telson. Pale, somewhat translucent.

In cavities under stones, shells etc., usually on a muddy bottom. L.W. to deep water. Rare.

APPENDIX

Condensed Key to the British Genera of Mysidacea

This key supplements the preceding one by providing a guide to the separation of material from a wider range of sources. It does not identify every genus individually but will pick out specimens which do not fall within the scope of the coastal fauna and will indicate at least to which group of genera they belong. For the further identification of such specimens the more comprehensive works must be consulted.

For those genera which are marked by an asterisk in this key, all the British species can be determined by means of the preceding one.

1. No statocyst in endouropod — 2
   Statocyst in endouropod (S.O. Mysida, Mysidae) — 4
2. No gills (S.O. Mysida, Petalophthalmidae) — *Hansenomysis; Petalophthalmus*
   Branching gills at bases of thoracic limbs (S.O. Lophogastrida) — 3
3. Thoracic limbs normal (Lophogastridae) — *Lophogaster; Gnathophausia*
   Three pairs of thoracic limbs extremely elongated and slender, nearly or quite as long as body, remainder short (Eucopiidae) — *Eucopia*
4. Telson distinctly notched or bifid at apex — 5
   Telson apex more or less rounded, truncate, or only slightly indented, not notched — 11
5. Apical notch in telson small or very small, with no teeth or spinules on its inner margin (there may be 2 plumose setae) — *Mysidopsis angusta; Mysideis*
   Apical cleft in telson substantial, bearing teeth or spinules on its inner margin — 6
6. Basal half or more of outer edge of antennal scale smooth and naked. Remainder of edge, anterior and medial to this, setose — 7
   Antennal scale setose all round — 9
7. Outer edge of exouropod naked for a short distance basally, this part separated from the setose distal part by one or two spines and a slight partial suture — *Boreomysis*
   Outer edge of exouropod not thus. No spines, or else many more than two, on outer edge — 8
8. Outer edge of exouropod bears spines, but not setae — *Gastrosaccus**; *Anchialina**
   Outer edge of exouropod bears setae but no spines — *Hemimysis**; *Paramysis**; *Schistomysis**; *Praunus**
9. Eyes reduced, flattened, without distinct stalks — *Bathymysis*
   Eyes normal, on fully developed stalks — 10
10. Cleft of telson rather small, with less than 5 pairs of teeth within — *Mysidetes; Mysidella*
    Cleft of telson substantial, with more than 5 pairs of teeth within — *Mysis; Heteromysis*
11. Exouropod divided (by a weak suture) into a shorter distal segment and a longer proximal portion. Outer margin of proximal portion bearing spines, distal segment with setae instead of spines. (The suture may be obscure, but the division is evident from the shape and armature of the exouropod) — *Siriella**
    Exouropod not divided — 12
12. Antennal scale vestigial or absent — *Arachnomysis; Chunomysis*
    Antennal scale well developed — 13
13. Antennal scale setose all round — 14
    Outer edge of antennal scale naked (but may be serrate) and ending in a spine. Remainder of edge, medial to the spine, setose — 18
14. Telson of characteristic shape: apex rounded, with numerous small teeth, flanked on each side by an angular shoulder bearing a strong spine. A few small lateral teeth behind this, margins otherwise smooth — *Mesopodopsis**
    Telson of some other form — 15
15. Lateral margins of telson armed with 20 or more spines, which may be of varying size, on each side — 16
    Lateral margins of telson with 14 spines or less on each side — *Mysidopsis* (part)
16. Telson apex narrowly truncate, maybe with a slight apical indentation, or almost pointed — 17
    Telson apex rounded — *Leptomysis**; *Acanthomysis**

17. Telson apex distinctly truncate, with or without an apical indentation. Eye with corneal part several times larger than stalk *Mysideis*
    Tapering apex of telson so narrowly truncate as to appear almost pointed. Eye with cornea and stalk about the same size *Neomysis**
18. Last thoracic segment greatly elongated. Carapace short. Large dorsal papilla on eyestalk *Longithorax*
    Last thoracic segment not elongated 19
19. Eyes well developed, with functional ommatidia 20
    Eyes degenerate, without distinct ommatidia 23
20. Eyes with postero-lateral and distal groups of ommatidia quite separate from each other *Euchoetomera*
    Eye normal, not divided 21
21. Lateral margins of telson unarmed; apex armed with 2 pairs of spines 22
    Lateral margins of telson armed with spines *Hypererythrops*, *Metamblyops*
22. Eyes with cornea reniform, flattened dorso-ventrally, pigment red. Telson shorter than broad; apex truncate, armed with 2 pairs of strong spines *Erythrops*
    Eyes with cornea more or less globular, little flattened if at all. Telson longer than broad *Parerythrops*, *Katerythrops*, *Meterythrops*
23. Eyes fused to form a median plate *Pseudomma*, *Michthyops*
    Eyes separate and distinct 24
24. Eyes in the form of flat plates without definite stalks *Amblyops*, *Paramblyops*, *Dactylerythrops*
    Eyes more or less pyriform, with definite stalks *Dactylamblyops*

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