



Horizon and locality. The London Clay, Isle of Sheppey and Whetstone, London; derived material from the London Clay, Red Crag, Felixstowe, and Walton-on-the-Naze.

Diagnosis. A *Scyllarides* with carapace and ridges covered with various sized tubercles, a large spiny tubercle on the median carina and another between this and the cardiac carina.

Description. The following is not a full description but consists of additions or changes to that of Woods (1925).

Cephalothorax. The margin between the rostrum and the preorbital spine is concave and occupies one quarter the anterior width. The strong anterodorsally directed preorbital spine is the continuation of a longitudinal carina which runs parallel to the median line, broken by the branchiocardiac groove, and continuing nearly to the posterior margin. Between the preorbital spine and the branchiocardiac groove lies a small blunt tubercle. The orbit is well rounded and terminates on the anterior margin; its lower margin bears an anteriorly directed spine on the outer side; the orbits occupy approximately one quarter of the anterior margin. The remainder of the margin to the anterolateral angle is slightly concave. There is a strong forward pointing lateral spine at the anterolateral angle reaching slightly further forward than the rostrum. The postcervical groove cuts the median line at right angles at a point approximately half the distance from the rostrum to the rear of the carapace; it forms an obtuse angle with the cervical groove, which is directed anterolaterally.

Some of the carapace tubercles have groups or lines of fine pores, possibly for setae. Larger pores lie in front of the tubercles on the elevated gastric region and lateral margins. There are other small round holes or pits at various places on the carapace. The outer margin runs slightly inwards from the anterolateral angle to the niche for the cervical groove. There are several forward pointing small blunt spines on this margin. The remainder of the lateral margin runs almost parallel, with several anteriorly directed blunt spines.

Abdomen. On the tergum of abdominal somites two to five a deep transverse groove cuts the median line at one third the distance from the front and runs forward until it reaches the anterior margin, just above the tergum boundary. A carina is formed on the median line behind this groove. Approximately half-way down the tergum a slight groove starts at right angles to the main groove and continues roughly in a semicircle to the posterior margin at the tergum boundary. This groove encloses a raised area which continues on to the pleura. The anterior margin slopes from the median line vertically to the tergum boundary, where a hollow boss accommodates the cone-shaped tubercle on the posterior margin of the previous somite. The margin then curves gently towards the rear and forms a scythe-like ventral spine with the posterior margin. The posterior margin ventral to the cone-shaped tubercle is slightly convex with a serrate edge of five or six downward pointing blunt spines. At the last of these spines the margin becomes strongly concave to form the posterior edge of the ventral spine. The posterior margins of the terga of somites five and six bear posteriorly directed blunt tubercles or spines. On the tergum of the sixth somite there is an additional groove, with a rear margin with blunt tubercles, instead of a median carina. On the pleuron of the sixth somite the posterior margin is slightly more concave, almost semicircular, to accommodate the tail members. The surfaces of somites one to six have irregular sized pits, both deep and shallow.

Telson. The calcified part of the telson has blunt tubercles of various sizes with groups or rows of fine pores towards the rear; towards the lateral margins the ornament changes to small irregular pits.

Ventral surfaces. The sternum, which is triangular with a median groove, is evident between the first and fifth pair of pereopods. There is a pair of small tubercles at the front, flanking the median line, opposite the coxa of the first pereopod. This is followed by four pairs of large tubercles, flanking the median line and opposite the coxae of the succeeding pereopods. Between the last two pairs of tubercles on the median line is a round cavity. The posterior margin of the sternum is straight, the surfaces tuberculate on raised portions, smooth at the bottom of grooves.

Appendages. The coxae of the first to fifth pereopods are triangular. The basis and ischium have a combined length similar to that of the coxa. The merus is oval in cross-section with a longitudinal ridge and pitted surfaces.

Discussion. König (1825) described and figured a unique specimen (BM 42228, Pl. 67, figs. 4 and 5) from the London Clay of the Isle of Sheppey, to which he gave the name *Cancer (Scyllarus?) tuberculatus*. Bell (1858, p. 36) considered that 'the whole surface of the carapace is fictitious, and the very tubercles on which the name was found exist only in obedience to the skill and trickery of the artist', an opinion with which Woods (1925) largely agreed. As a result of his misinterpretation,

Bell disregarded König's name *tuberculatus* and substituted the honorific *Koenigi*. On examination by the present author, however, it became clear that this specimen consists of a normally preserved (i.e. with surface detail) abdomen of *Scyllarides* and an internal cast of the carapace. The general shape of the two tubercles on either side of the body as depicted by König (1825, pl. 4, fig. 54) is evident on the specimen. Bell's argument for changing the name of this species rested on the fact that he considered that the carapace surface and the tubercles were fictitious. König's original name is retained here, as advocated by Morris (1980).

Order STOMATOPODA Latreille, 1817
 Family SQUILLIDAE Latreille, 1803
 Genus BATHYSQUILLA Manning, 1963

Type species. *Lysiosquilla microps* Manning, 1961, by original designation, Recent.

Diagnosis. Telson with blunt median carina and all four pairs of marginal teeth with movable apices.

Range. Lower Eocene Recent.

Bathysquilla wetherelli (Woodward, 1879)

Plate 67, figs. 7-9

- 1879 *Squilla wetherelli* Woodward, p. 549, pl. 26, fig. 1.
 1969 *Squilla? wetherelli* Woodward; Holthuis and Manning, R541.
 1974 *Squilla wetherelli* Woodward; Cooper, p. 85.
 1980 *Squilla wetherelli* Woodward; Morris, p. 17.

Type. The holotype, by monotypy, is BM 59780 (Woodward 1879, pl. 26, fig. 1), London Clay, Highgate, Wetherell Collection.

Other material. BM 38399 collected W. Griffith; BM In.38262 collected D. J. Jenkins; In.63390 (Pl. 67, figs. 7 and 8) and In. 63391 (Pl. 67, fig. 9), both *ex* JSQ Collection.

Horizon and locality. All from the London Clay: BM In.38262, Beltinge, East Cliff, Herne Bay; BM 38399, BM In.63390, and In.63391, Isle of Sheppey.

Diagnosis. A stomatopod with a marginal carina on the abdominal somites and a fine transverse groove on the tergum of the second abdominal somite; the propodus of the raptorial claw is armed with spiniform teeth.

Description. The posterolateral angle of the carapace is well rounded, and the posterior margin straight. The surface of the thoracic tergites curves steeply ventrally on either side of the median line in a regular curve to the lateral margin of the tergum where there is a slight ridge. The pleura of somites seven and eight have a deep U-shaped indentation in the lateral margin. The width of the somites increases slightly towards the telson, eight being the widest at approximately half the width of the first abdominal somite. Abdominal somites one to four curve steeply ventrally on either side of the median line in a regular curve to the lateral margin where there is a slight ridge which turns slightly inwards to form a semicircular depression on the pleuron. This depression varies in width and depth; on the second somite it is nearly the full width and half the depth of the pleuron but it decreases in size on successively posterior pleura. The remaining surface of the pleuron is almost flat. The posterolateral angle of each pleuron is produced backwards into a small acute tooth and the posterior margin is straight. Each somite (one to four) has an oblong punctum on either side near the lateral margin of the terga; somites two to four bear two small sub-central puncta on the anterior border; three and four have a single central punctum on the posterior border. A fine groove, approximately two thirds the width of the tergum in length, runs parallel to the posterior margin and cuts the median line of the second somite at mid-point. Part of the tergum of the fifth somite is preserved with a single central punctum near the posterior margin. The sixth somite has a scabrous surface ornamentation.

The remains of the raptorial claw are evident on BM In.63390 (Pl. 67, fig. 8). Part of the inner margin of the propodus is preserved showing four equally spaced spiniform teeth. The dactylus is almost complete; the inner margin bears at least seven strong triangular teeth increasing in size to the terminal one.

Discussion. The Recent members of this group are abundant but are mainly restricted to tropical and subtropical seas. The type species *Lysiosquilla microps* was described by Manning (1961, p. 693) from two Recent specimens taken from 732 and 916–952 m off the east and west coasts of Florida.

Fossil stomatopods are rare and usually imperfectly preserved. The oldest known, *Sculda* Münster, 1840 (Holthuis and Manning 1969, R541), occurs in the Jurassic lithographic limestones of Solenhofen, Bavaria. New material from the Eocene of the Isle of Sheppey shows that the species described here cannot be included in the genus *Squilla*. Some of the diagnostic characters are not preserved but the longitudinal carinae on the abdomen and the upper margin of the propodus, and the even pectination of closely placed short blunt spinules are absent. This species shows similarities to both *Harpiosquilla* Holthuis, 1964 and *Bathysquilla*. The first closely resembles *Squilla* and has spaced spiniform teeth on the upper margin of the propodus of the raptorial claw but in all species the abdomen is strongly carinate. *Bathysquilla* lacks carinae on the abdomen and the propodus of the raptorial claw is armed with spiniform teeth. The affinities of this species therefore lie with *Bathysquilla*.

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W. J. QUAYLE
51 White's Road
Bitterne
Southampton SO2 7NR