

FAUNA OF THE CHILKA LAKE

STOMATOPODA.

By **STANLEY KEMP, B.A.**

(With 2 text-figures.)

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STOMATOPODA.

By STANLEY KEMP.

Two species and one variety of Stomatopoda have been found in the Chilka Lake, but the only one that is abundant is *Squilla scorpio* var. *immaculata*, a form also common in brackish water in the Gangetic delta. The occurrence both of *S. scorpio* and its variety *immaculata* is of some interest, for the two had not hitherto been found together. No specimens intermediate in character were observed, and it is possible that the two forms should more properly be recognised as distinct species. A knowledge of the early stages might throw light on this point; but all the larvae found in the lake are of one type and, if a difference exists in the structure of the *Alima*, they belong presumably to the more abundant var. *immaculata*. The third form, *Squilla interrupta*, seems to be merely a casual visitor to the lake-system, in which only one example has been found. This species and the typical form of *S. scorpio* have a wide Indo-pacific distribution, while the variety *immaculata* is known from an area extending from the mouth of the Indus to the coast of Burma.

Family SQUILLIDAE.

Genus **SQUILLA**, Fabricius.

Squilla scorpio, Latreille.

1913. *Squilla scorpio*, Kemp, *Mem. Ind. Mus.*, IV, p. 42, pl. ii, fig. 30.

The typical form of this species is very scarce in the Chilka Lake; it is represented in our collection by two males and eight females, the largest 67 mm. in length. The black patch on the lateral process of the fifth thoracic somite is conspicuous in all the specimens, even in the smallest, an individual only 21 mm. long.

Squilla scorpio was found both in the main area and in the outer channel of the lake in water varying in specific gravity from 1.000 to 1.0265. It is known to be distributed over an area extending from the east coast of India to N. Australia and Celebes and has, apparently, hitherto been obtained only in the sea.

var. ***immaculata***, Kemp.

1913. *Squilla scorpio* var. *immaculata*, Kemp, *Mem. Ind. Mus.*, IV, p. 45, pl. ii, fig. 31.

Squilla scorpio var. *immaculata* is one of the commonest Crustaceans in the main area of the lake, occurring on a muddy bottom at all seasons of the year. It was also obtained on similar ground at the inner end of the outer channel and is able to exist, and apparently to breed also, in water varying in specific gravity from 1.000 to 1.0265.

Although both the typical form and the variety have been obtained at a number of localities on the Indian coast, this is the first occasion on which the two have been found together. It is therefore interesting to notice that in the Chilka Lake they are very easily distinguished and that in our long series no single individual intermediate in character was obtained. In specimens of the variety in which the pigmentation is unusually dense, the lateral process of the fifth thoracic somite is occasionally somewhat dusky but never dark enough to cause confusion with the typical form, while the correlated structural differences in the shape of the rostrum and carination of the carapace will also suffice to separate the one from the other. It seems, indeed, not

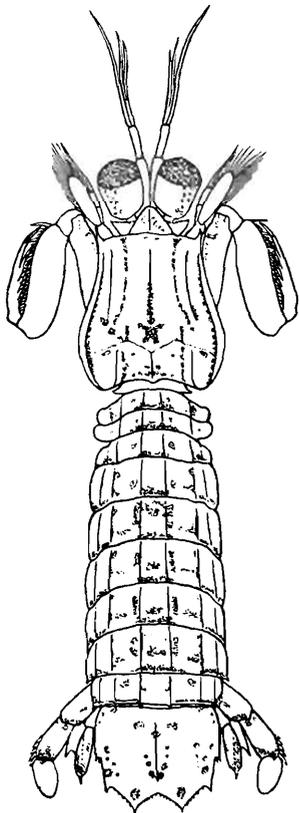


FIG. 1.—*Squilla scorpio*
var. *immaculata*, Kemp.

A post-larval specimen about
8 mm. in length.

by any means improbable that the variety *immaculata* will ultimately be given specific rank; but, apart from colour, the distinctions are so slight that it is inadvisable to take this course with the information we at present possess. A knowledge of the early stages of the two forms will perhaps afford a useful clue, but the series of larvae obtained in our tow-nettings are all of one type. In view of the great numerical preponderance of the variety *immaculata*, it seems probable either that they belong to this variety or that the varietal and typical forms are indistinguishable in their early stages.

Specimens of the variety were obtained in the trawl in many places both in the outer channel and in the main area and were found in the salt-water season, when the water-level was at its lowest, under stones on the shore of Barkuda Id., living in burrows. The burrows were about half an inch in diameter and were U or Y-shaped, the distance between the openings being about eight inches. On lifting the stone the whole burrow was sometimes disclosed; it frequently contained practically no water. The *Squilla* occupied a slightly widened chamber at the bend of the U or in the stalk of the Y. Specimens were also observed at the head of Rambha Bay, on mud-flats left bare owing to the action of strong wind. They lay at the mouth of their burrows, which were directed vertically downwards for about 3 inches before turning horizontally over a layer of shingle. No individuals with egg-masses were observed.

POST-LARVAL FORMS.

Our collection contains twenty-seven specimens less than 30 mm. in length which may conveniently be termed post-larval. The series apparently comprises four stages, the lengths of which are approximately 7.5—8.0 mm., 11.5—12.0 mm., 15.5—16.0 mm. and 25—27 mm. There are, however, one or two specimens of intermediate sizes.

The youngest post-larval stage (text-fig. 1) bears a close resemblance to the adult, but the eyes are proportionately much larger, the rostrum is broader at the base

and more strictly triangular in outline, the lateral margin of the fifth thoracic somite is scarcely at all produced and the telson still possesses between the marginal teeth the fine widely-separated spinules characteristic of the larval stages.

The single post-larval specimen of the typical *S. scorpio*, an individual 21 mm. in length, is easily distinguished from examples of the var. *immaculata* measuring 16 and 25 mm. by the same characters that serve to separate the adults. All post-larval specimens of 16 mm. in length and under apparently belong to the variety, lacking the characteristic features of the typical form. It appears to me probable that the two are to be distinguished even in the earliest post-larval stages and that such stages of the typical *S. scorpio*, a form comparatively rare in the Chilka Lake, are absent from our collections. There is, of course, a possibility that the two are inseparable until they have reached a length of about 2 cms.

LARVAL FORMS.

The larval forms found in the Chilka Lake are all of one type and the majority are doubtless those of *S. scorpio* var. *immaculata*. The larvae of the typical form were either not obtained or are inseparable from those of the variety.

The largest larvae in the collection (text-figs. 2a-c) are from 11.5 to 12.0 mm. in length from the tip of the rostrum to the apex of the telson. The rostrum is not as long as the carapace, the antero-lateral spines are shorter, in length scarcely equal to half the anterior breadth of the carapace, while the postero-laterals are long, about two-thirds as long as the distance between the antero-lateral angles and the posterior margin. The carapace is carinate in the mid-dorsal line, the carina terminating posteriorly in a spine, directed obliquely upwards and backwards, that is fully one-third the length of the postero-laterals. The lower edge of the rostrum, a little behind its middle point, is provided with one, less commonly with two, spinules. On the lateral margin of the carapace are three spinules, one close to the antero-lateral spine and two in the posterior quarter of its length (text-fig. 2c). On the inferior aspect of each postero-lateral spine is a sharp spinule and another, which appears to be highly characteristic of this particular larva, is found on each side of the posterior margin midway between the postero-median and postero-lateral spines.

The eyes are comparatively large, the basal portion of the stalk being very slender. The penultimate segment of the raptorial claw bears, on the margin opposed to the dactylus, two stout basal teeth, beyond which is a series of fine pectinations. The dactylus shows no trace of teeth (text-fig. 2b).

The appendages of the last three thoracic segments are well developed and biramous; only the last segment is exposed in dorsal view. The postero-lateral angles of the abdominal somites are not provided with spines and there are no spines on the posterior margin of the last segment. The pleopods are well formed but do not bear gills.

The telson is a trifle broader than long and is carinate mid-dorsally. There are eight pairs of spinules between the submedian teeth, five to seven spinules between the submedians and intermediates and one between the intermediates and laterals.

The uropods reach midway between the lateral and intermediate teeth of the telson ; the basal segment of the outer uropod bears a series of spinules on its outer edge.

The two other larval stages in the collection are approximately 9·0—9·5 mm. in total length (text-fig. 2*d*) and 7·3—8·0 mm. in length (text-figs. 2*e*, *f*). At all stages there is a certain amount of variation in the length of the rostral and postero-lateral spines. This variation is most marked in the youngest stage ; text-fig. 2*g* is an illustration of a specimen in which the spines are exceptionally long.

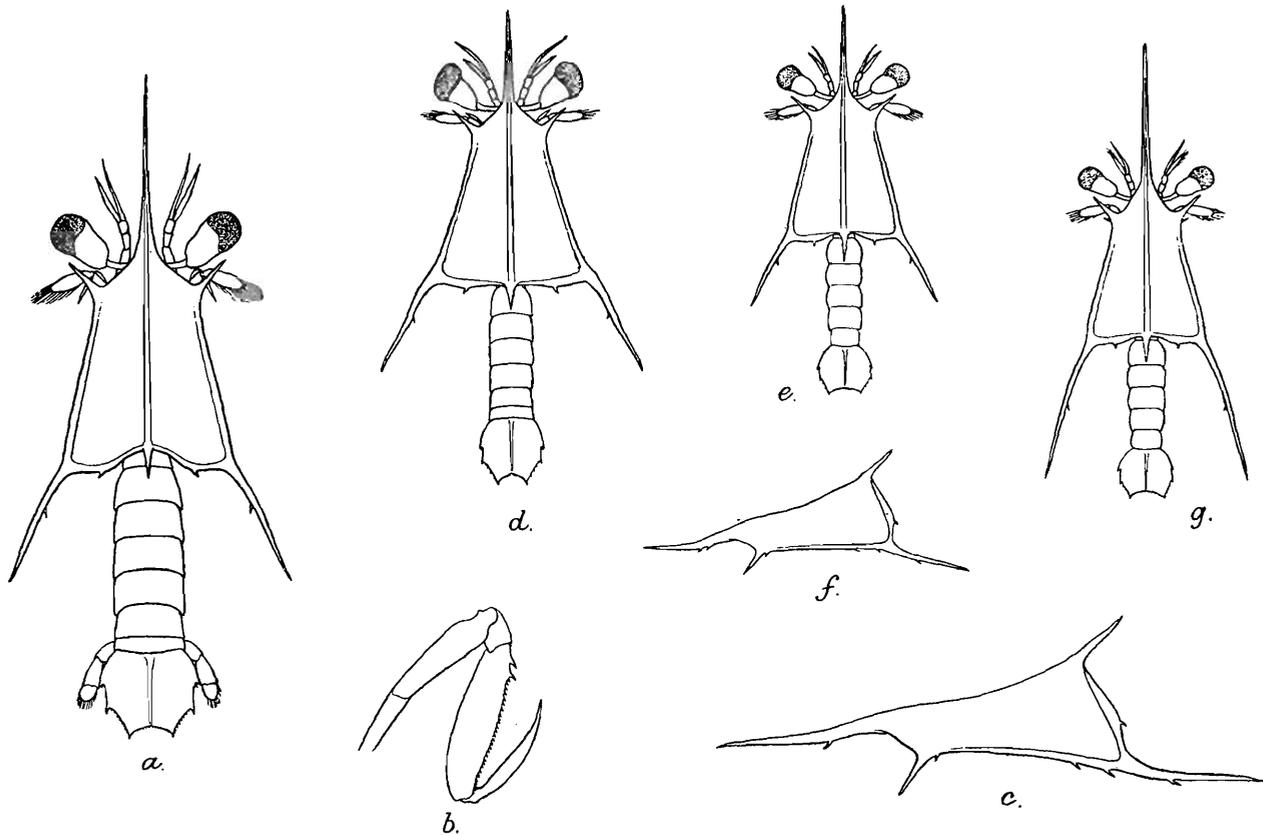


FIG. 2.—*Squilla scorpio*, Latreille.

Larvae presumably belonging to the var. *immaculata*.

- a. Larva belonging to the largest stage obtained.
- b. Raptorial claw of the same larva.
- c. Carapace of the same larva in lateral view.
- d. Larva belonging to an intermediate stage.
- e. Larva belonging to the youngest stage obtained.
- f. Carapace of the same larva in lateral view.
- g. Larva belonging to the same stage, with abnormally long rostral and postero-lateral spines.

The pair of small spinules on the posterior margin of the carapace is developed in all three stages ; by this character the *Alima* of *S. scorpio* var. *immaculata* appears to be sharply distinguished from all larvae hitherto described.

All the larvae obtained were found during the months of February, March and July, at a time when the water of the lake was almost or quite at its saltiest. Reproduction probably commences early in the year, as soon as the first influx of salt water from the Bay of Bengal has taken place.

Squilla scorpio var. *immaculata* has been recorded from Karachi, from the Gangetic delta and from the Arakan coast. In the vicinity of Calcutta, a locality in which the typical form has never yet been found, it is far from uncommon, living in water of low but variable salinity.

Squilla interrupta, Kemp

1913. *Squilla interrupta*, Kemp, *Mem. Ind. Mus.*, IV, p. 72, pl. v, figs. 60-62.

A single specimen of this species, a male 77 mm. in length, was obtained by Mr. T. Southwell in August, 1913, from fishermen at Satpara. The specimen was undoubtedly found in the outer channel of the lake, and if, as seems probable, the periodic changes in salinity in 1913 were the same as those of 1914, the individual must have been found in fresh water.

We obtained no specimens during our survey of the lake and are inclined to regard the species merely as a casual immigrant to the outer parts of the lake-system. *Squilla interrupta* is common on the Orissa coast of the Bay of Bengal and is known to have a distribution extending from the Persian Gulf to Formosa and Hongkong.