

**Chromatophore Pattern:** The chromatophore pattern characterising all the zoea larval stages of *P. elongatus* is seen in the stage 1a zoea. Distal half of rostrum and posterior carapace spines orange-brown. First antennae and mandibles with paired red or orange chromatophores at base. Thoracic region with a paired red chromatophore above third maxillipeds and anterior pereopods. Mid-gut yellow. Second, third, fourth and fifth abdominal segments each with paired red chromatophore along lateral walls of hind-gut and an unpaired orange chromatophore in the ventral midline. Telson with a paired red chromatophore surrounding anus.

### Stage 1b

Stage 1b zoea larvae were obtained from the plankton and by moult from stage 1a in the laboratory. Several stage 1a larvae obtained by moult from the pre-zoea larva in the laboratory later moulted to stage 1b. However the majority of stage 1a larvae bypassed stage 1b and moulted to stage 2a. Stage 1b occurs only rarely in plankton samples, suggesting that this stage is often bypassed in natural conditions.

Stage 1a and 1b of *P. elongatus* are more easily separated than are the equivalent stages of *P. novaezelandiae*. Stage 1b larvae of *P. elongatus* are distinguished from stage 1a by the characters described below.

### Description

**Cephalothorax:** Total carapace length 14.4mm to 15.5mm, rostrum length 8.5mm to 9.0mm, carapace length 1.4mm to 1.6mm and posterior carapace spine length 4.5mm to 4.9mm.

**Cephalic Appendages:** Exopodite and endopodite of second antenna (Fig. 1, E) are of equal length.

**Thoracic Appendages:** Endopodite and exopodite of third maxillipeds (Fig. 1, K) long, rod-like, but without setae. Pereiopod buds (Fig. 1, K) as long unsegmented rods.

**Abdomen:** Posterior telson setae longer than in stage 1a, with seventh (inner) pair as long as the third, fourth, fifth and sixth pairs. (Fig. 1, M).

## STAGE TWO ZOEAE

### Stage 2a

Stage 2a zoea larvae (Fig. 2, A) were obtained from the plankton, and by moult from stages 1a and 1b in the laboratory. During laboratory experiments several stage 1b larvae bypassed stage 2a and moulted to stage 2b. Stage 2a larvae are common in the plankton but it does not appear to be an essential stage in the life history. Stage 2a can be readily distinguished from stages 1a and 1b by the characters below.

### Description

**Cephalothorax:** Total carapace length 17.0mm to 18.4mm, rostrum length 10.0mm to 10.7mm, carapace length 2.4mm to 2.5mm and posterior carapace spine length 4.6mm to 5.1mm. Eyes now stalked and movable.

**Cephalic Appendages:** First antenna (Fig. 2, B) comprises a long peduncle incompletely divided into two segments of approximately equal length, and two short distal rami. Peduncle with two short hairs midway along outer margin. Inner ramus unsegmented, with two short simple setae arising from base on inner margin. Outer ramus incompletely divided into six segments, with long aesthaetes arising from inner margin in four distal groups. (Fig. 2, C.)

Second antenna (Fig. 2, D) with protopodite incompletely divided into two segments (coxopodite and basipodite). Endopodite about  $1\frac{1}{2}$  times the length of exopodite.