

## THE ZOEAL LARVAE

The zoea larval stages of *Petrolisthes novaezelandiae* are found in the Wellington Harbour plankton throughout the year, but are most abundant in late spring and summer (November to January). Two zoea larval stages are essential in the life history. These are stages 1a and 2a. In moulting to stage 2a, stage 1a larvae may bypass stage 1b. In moulting to stage 2c, stage 2a larvae may bypass stage 2b. Stage 2c may also be bypassed, as several stage 2b larvae moulted to the megalopa larva in the laboratory. It is therefore probable that the sequence of larval stages is either 1a → 2a → 2c → megalopa or 1a → 1b → 2a → 2b → megalopa. This reduction in the number of zoeal stages is similar to the pattern shown for *Porcellana longicornis* and *P. platycheles* by Lebour (1943). Lebour notes that it is extremely doubtful if any larva moults through all possible five stages in reaching the megalopa stage.

A KEY TO THE ZOEAL LARVAE OF *Petrolisthes novaezelandiae*

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| 1 (4) Total carapace length less than 10.0mm; eyes sessile and immovable; 1st antennae uniramous; endopodite of 2nd antennae shorter than exopodite; exopodite of 1st and 2nd maxillipeds with 4 natatory setae only; 3rd maxillipeds uniramous; pleopod buds absent; telson with 7 + 7 posterior setae; distal hooklets on 3rd posterior telson setae only  | ..... | STAGE ONE         |
| 2 (3) Endopodite of 2nd antennae less than half the length of exopodite; no sign of 3rd maxillipeds or pereopods   | ..... | Stage 1a (Fig. 1) |
| 3 (2) Endopodite of 2nd antennae greater than half the length of exopodite; 3rd maxillipeds and pereopods present as small buds  | ..... | Stage 1b (Fig. 2) |
| 4 (1) Total carapace length greater than 10.0mm; eyes movable and borne on short stalks; 1st antennae biramous; endopodite of 2nd antennae longer than exopodite; exopodite of 1st and 2nd maxillipeds with about 12 natatory setae; 3rd maxillipeds biramous; pleopods present as small buds; telson with 8 + 8 posterior setae, with 8th (inner) pair arising from the central prominence; distal hooklets on 3rd and 4th telson setae | ..... | STAGE TWO         |
| 5 (8) Flagellum of 2nd antennae unsegmented; mandibles without palp; palps of 1st and 2nd maxillae unsegmented; pereopods unsegmented; pleopod buds unsegmented.   |       |                   |
| 6 (7) Peduncle of 1st antennae unsegmented; endopodite of 2nd antennae about twice the length of exopodite; pereopods short and very slender; gill buds absent or very tiny  | ..... | Stage 2a (Fig. 2) |
| 7 (6) Peduncle of 1st antennae incompletely divided into 2 segments; endopodite of 2nd antennae greater than twice the length of exopodite; pereopods strongly developed; all gill buds well formed  | ..... | Stage 2b (Fig. 3) |
| 8 (5) Flagellum of 2nd antennae visibly segmented beneath cuticle; mandibles with a slender, unjointed palp; palps of 1st and 2nd maxillae completely or incompletely segmented; pleopod buds massive and two-segmented  | ..... | Stage 2c (Fig. 3) |