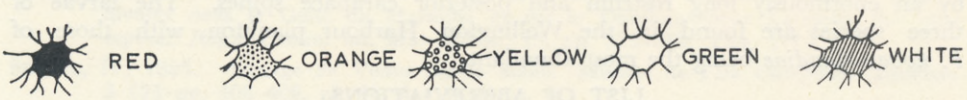
MATERIALS AND METHODS

Thirty-five adults dredged from Wellington Harbour were kindly lent to the author by Dr Dell (Dominion Museum), and 32 adults dredged in 4 fathoms from the Bay of Islands were obtained through courtesy of the Marine Department, Wellington. Four adults and larvae of the United Kingdom species *Porcellana longicornis* were obtained from Dr Pike for comparative purposes.

Larvae were obtained from the Wellington Harbour plankton and living larvae were kept in the laboratory for rearing. These were identified to species after the second juvenile (post-megalopa) stage had been reared from the final zoea in the laboratory, and compared with the adult.

Two main zoea larval stages were recognised in the planktonic life history of *Petrolisthes novaezelandiae*. These have been termed zoeal stages 1 and 2 respectively. The first stage has two sub-stages which have been termed sub-stages 1a and 1b respectively. Within stage 2, sub-stages 2a, 2b and 2c have also been recognised. This is the conventional nomenclature used by Lebour (1943, 1950) in describing the zoea larval stages of the genera *Petrolisthes* and *Porcellana*. The larval stages were determined by rearing planktonic first stage larvae to a second stage in the laboratory, and the subsequently recognisable second stage larvae were obtained from the plankton and reared to a third zoea. Later stages were obtained in a similar manner. The laboratory reared zoeal stages were compared with those found in plankton samples and they corresponded in all essential details. There is a single megalopa larval stage which was not found in the plankton. This was reared from late stage larvae in the laboratory.

Drawings and descriptions of the zoea larvae and of the megalopa larva are based on about 40 larvae of each stage. The coloured chromatophores are represented by the following code:



Measurements of the zoea larvae are given in "rostrum lengths", "carapace lengths", "posterior carapace spine lengths", and "total carapace lengths". The rostrum length is measured from the base of the rostrum to its tip, the carapace length is measured from the base of the rostrum to the posterior mid-dorsal margin of the carapace, and the posterior carapace spine length is measured from the posterior mid-dorsal margin of the carapace to the tips of the pair of posterior carapace spines. The total carapace length of the zoea larvae is measured from the tip of the rostrum to the tips of the posterior carapace spines. Measurements of the megalopa larva are given in "carapace length" and "carapace width". The carapace length is measured from the tip of the rostrum to the posterior mid-dorsal margin of the carapace, and the carapace width is measured at right angles to the carapace length across the widest part of the carapace.

Nomenclature of the larval limbs and limb-segments is based on Borradaile (1926) and Hale (1927). The decapod larval terms "zoea" and "megalopa" are here employed in the sense suggested by D. I. Williamson (1957), and where possible the ambiguous term "post-larva" has been avoided. Non-larval stages following the megalopa have been termed "juvenile stages".