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The First Three Larval Stages and Feeding Behaviour of  
Phyllosoma of the New Zealand Palinurid Crayfish  
*Jasus edwardsii* (Hutton 1875)

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Abstract

*Jasus edwardsii* larvae, after a very brief naupliosoma phase, take about three weeks in southern New Zealand early summer conditions for the Stage I phyllosoma, then moulting to the Stage II phyllosoma. The naupliosoma has plumose swimming second antennae. Stage I phyllosomas have a body length of 2.1–2.2mm, and show only minute rudiments of the fourth pair of legs. Stage II phyllosomas have a body length of 2.7mm, and biramous 4th leg rudiments 0.3mm long. The phyllosomas showed no feeding response to an assortment of planktonic animals, but were found to feed voraciously on pieces of capitellid polychaet. The hypothesis is provisionally put forward that phyllosomas in this species may be largely benthic scavengers rather than planktonic in their habits.

INTRODUCTION

THIS study, of a preliminary nature, was stimulated by a remark made to me by Dr D. I. Williamson at the Port Erin Marine Biological Station. He commented that, just before he had returned from Australia, he had observed phyllosoma larvae of the Australian *Jasus* nibbling hydromedusae, and he thought these might be their natural food. An earlier attempt of mine to feed *Jasus edwardsii* phyllosomas had been unsuccessful, and it seems that palinurid larvae have in the past proved notoriously difficult to rear. For instance, Johnson (1956) states, of *Panulirus interruptus*, "the young hatched readily in aquaria, but attempts at rearing the larvae were futile. Other investigators have had similar experiences in attempts at rearing the phyllosoma larvae of other species." A recent exception to this is a study by Saisho (1962), who reared *Panulirus japonicus* phyllosomas through 10 ecdyses, using brine shrimp larvae as food.

*Jasus edwardsii* is by far the most important species economically in New Zealand's total fisheries. During the first decade after World War II, with the exploitation of stocks in the southern fiords, the New Zealand crayfishery rose steeply in value. From £29,100 in 1946 it ascended to £966,361 in 1956—a 33-fold increase. After dropping during the next three years, it then rose steadily,

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