

IMPROVING YIELD AND MARKET TRAITS OF SOUTHERN ROCK LOBSTERS THROUGH TRANSLOCATION

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The Tasmanian rock lobster resource has extreme variation in growth rates around the state as well as through depth. In deep water regions, massive tonnages of potential harvest are dying from old age without reaching legal size, as well as having unfavourable body proportions such as narrow tail widths and spindly legs. The decrease of red pigmentation from shallow to deeper waters is also of concern because the Asian market pays a premium price for rich-red coloured lobsters and lower prices for pale, brindle coloured deeper water lobsters. Diet is thought to be primarily responsible as lobsters cannot synthesise their own carotenoids and must derive it from the available food. Furthermore, higher transport mortality of up to 25% in deep-water lobsters as compared to 5% in shallow water lobsters has been attributed to a combination of post-capture stress and initial condition. For deep water lobsters, lower energy reserves from a poor diet and greater change in environmental variables (pressure, light, temperature) when pots are lifted may be responsible for the substantial leg loss and the greater percentage of moribund lobsters. The annual loss to the industry caused by the reduced marketability is estimated at \$20 million.

To improve the yield and marketability of deep-water southern rock lobsters, translocation is being explored as a supplementary management strategy for the Tasmanian Rock lobster fishery. Translocation is the deliberate movement of wild individuals or populations from one part of their range to another to establish, re-establish, or augment populations. If translocated to shallow water reef dominated regions, will greater food availability and optimal conditions result in increased growth rate and changes to colour, morphology and condition?

Preliminary results from a pilot study have proven this application to be valuable in terms of achieving 100% colour change (Figure 1) and a higher than expected mean growth rate. Larger-scale translocations are underway to further explore these parameters and to examine the change in morphometrics and condition. The first part of this study examines colour, condition, and morphometric differences between these two dissimilar habitats supporting populations of *Janus edwardsii*, while the second part will re-address them after the translocation treatment. Ultimately, we want to know if these deep-

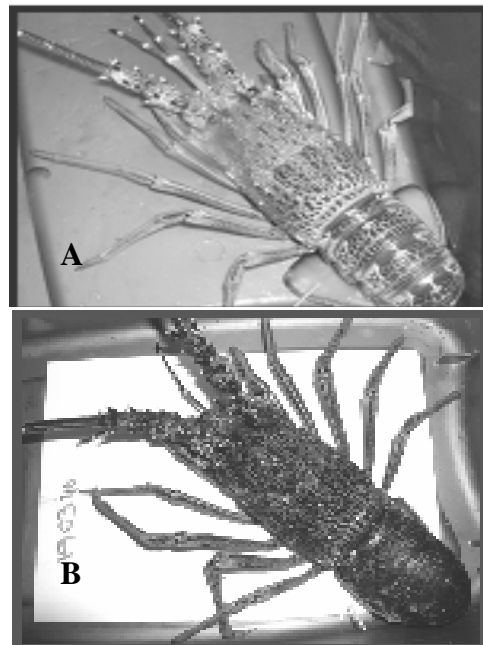


Figure 1: Deep water lobster before (A) and after (B) translocation.

water lobsters become more marketable. Translocation is a novel application for the marine environment, as it is not implemented here to address conservation or restocking purposes but rather as a fishery management tool for the long term benefits of economical growth through value adding, stock enhancement, and to achieve a more natural size distribution of stocks and ecology around Tasmania.