ASPECTS OF THE BIOLOGY OF GRUNTS (TELEOSTEI : HAEMULIDAE) FROM NORTH QUEENSLAND WATERS.

Thesis submitted by

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ABSTRACT

Three species of haemulid fishes, *Pomadasys kaakan*, *P. argenteus*, and *P. maculatus*, were sampled from two sites, one inshore and one estuarine, in the Townsville region, northern Queensland. Aspects of their biology, with emphasis on feeding, reproduction, growth, and movements were studied.

It was found that all three species were primarily feeding on decapod crustaceans. However, bivalve molluscs and annelids were also important food items for these species at some times of the year.

All three species spawn over a prolonged breeding season, from about August to March, and individuals most probably spawn more than once during that period. There is a major spawning peak in spring (September - November) and a minor spawning peak in late summer/early autumn (February - March).

Two marks were laid down per year on the scales of individuals of *P. kaakan* and *P. argenteus*, corresponding with the times of the two peak spawning periods, but these are not spawning marks *per se*. The timing of mark formation suggests that it may be related to physiological changes or other events associated with reproductive development, and that one is a 'birthday' mark, laid down at the corresponding time of the year when the fish was spawned, and the second during the other peak spawning period. Individuals of *P. maculatus* larger than 100mm total length (TL) generally had a

high proportion of replacement scales, which were not useful for ageing purposes.

Individuals of each species grew rapidly over the first year, with those of *P. kaakan* and *P. argenteus* attaining average lengths of 157mm and 152mm respectively, and of *P. maculatus* an average length of 120mm. Early spawned fish grow larger than these values, due to a longer period of favourable growth conditions after being spawned, while late spawned fish grow slower and reach a smaller size. After the first year, individuals of *P. kaakan* continue to grow rapidly, approaching an estimated asymptotic length of 756mm, and a weight of 5.2kg, after 10+ years. *P. argenteus* may live to about 10 years old, but only reaches an estimated asymptotic length of 481mm and a weight of 1.6kg. Individuals of *P. maculatus* appear to be short lived, attaining approximately 60% of their growth in the first year and approaching their estimated asymptotic length of 203mm after 4 to 5 years. The weights of *P. maculatus* corresponding with the estimated asymptotic length are 143g for females and 127g for males.

Growth patterns determined from length frequency analysis, scale reading and tagging, were in close agreement, and von Bertalanffy growth equations were determined for each species.

Tagging of *P. kaakan* and *P. argenteus* indicated that most individuals of these fishes in the estuarine situation, at least up to 300mm TL, remained close to the tagging sites, with recoveries over periods as long as 517 days providing no evidence for extensive, or regular, movements.

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DECLARATION

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

T.M.BADE.

1 June, 1989.

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