Aust. J. Mar. Freshw. Res., 1987, **38**, 103–19

Distribution of Seagrasses and Associated Juvenile Commercial Penaeid Prawns in North-eastern Queensland Waters

R. G. Coles, W. J. Lee Long, B. A. Squire, L. C. Squire and J. M. Bibby

Northern Fisheries Research Centre, Queensland Department of Primary Industries, c/- Post Office, Bungalow, Cairns, Qld 4870.

Abstract

Thirteen species of seagrass and six species of juvenile penaeid prawn of commercial importance were found in seagrass beds in waters between Cape York and Cairns. The pioneering seagrass species, *Halodule uninervis* (Forsk.) Aschers. and *Halophila ovalis* (R. Br.) Hook. f., were present in almost all coastal areas. Two seagrass species often dominant in the tropics, *Enhalus acoroides* (L.f.) Royle and *Thalassia hemprichii* (Ehrenb.) Aschers., were uncommon. This is likely to have resulted from environmental stress during periods of reduced salinity and high turbidity associated with seasonal summer rainfall. *Halophila decipiens* Ostenfeld was the only species found in depths >11 m. Three depth-related zones of species are described. With the exception of *E. acoroides*, most seagrasses were <20 cm in height. Seagrass biomass was greatest in 2–6 m of water. Maximum dry weight of above-ground plant material and maximum leaf area from a square metre of bottom was 99·6 g and 4·5 m^2, respectively, at the Flinders Group of islands. The distribution of prawns and seagrasses did not show a trend with latitude. *Penaeus esculentus* Haswell and *Metapenaeus endeavouri* (Schmitt), the most numerous penaeid prawn species in commercial trawl catches, were also the most numerous juvenile prawns in seagrass beds. Juvenile *P. longistylus* Kubo were found for the first time in northern Queensland seagrass beds. Although juveniles of this species appeared to occupy only a narrow habitat range, these habitats were found in coastal bays, in estuaries and on coral-reef platforms where conditions were suitable. Size-class data suggest that reef prawns and coastal prawns are parts of the same population. The timing of the life cycle of the major commercial prawn species differed from that found previously in the Gulf of Carpentaria.

Introduction

Nearshore, intertidal and estuarine seagrass-vegetated areas are important habitats for juveniles of commercial penaeid prawn species (Young and Kirkman 1975; Staples 1984; Coles and Lee Long 1985). In northern Queensland waters, the tiger prawns *Penaeus esculentus* Haswell and *P. semisulcatus* de Haan, and the endeavour prawn, *Metapenaeus endeavouri* (Schmitt), form the major component of an otter trawl fishery for prawns.

Postlarvae and juveniles of tiger and endeavour prawns are found almost exclusively in seagrass beds and these habitats are necessary for the survival and growth of the juveniles of these species (Staples 1984; Coles and Lee Long 1985). A reduction in the extent of seagrass beds could reduce prawn production (Kirkman 1978; Staples 1984). Preserving this aquatic habitat is an important aspect of the management of north Queensland's commercial prawn trawl fisheries. As a first step in providing

0067-1940/87/010103$02.00