

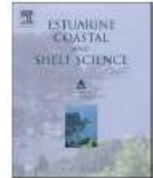
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Re: MPAs and large no-fishing bans of minimum 30% of marine areas

Don't be fooled by the "more and bigger fish in Marine Protected Areas" line. This just shows no fishing occurs in MPA "green" zones - (ie: fishers follow the rules). But for green zones to do any good, the assumption used by many scientists (some of whom are terrestrial experts and hence have only basic understanding of processes within the marine environment) is the extra eggs and larvae of aquatic animals "must survive". But if you don't look after the habitat and water quality, larvae and egg survival of fish, molluscs and crustaceans is very poor, or even non-existent in highly polluted areas. In Australian fisheries, egg production is not usually the bottleneck. For fish, good fisheries management assures there are enough eggs, and if overfishing occurs, tighter fisheries management can be used to reverse the trend. But we need healthy habitat and clean water to complete the cycle, especially in the inshore nursery areas. Check out the paper on the next page from Weipa. They record no change in fish populations or species diversity in that estuary in 20 years, despite recreational fishing all that time. Why? Fishing at Weipa is well managed and they have a healthy environment. If you have good fisheries management and a clean environment, we only need small green zones as scientific research benchmarks. Calls for blanket fishing area closures of 30%-50%-90% are barking up the wrong tree, and also tend to ignore the huge socio-economic ramifications. The way forward is to fix the real habitat and water quality problems, especially where they occur in our inshore nurseries. No-fishing zones of ever-increasing size are not the answer, as they do not address these real and critical issues affecting biodiversity and fisheries production in our inshore nursery habitats.



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Changes in the fish fauna of a tropical Australian estuary since 1990 with reference to prawn predators and environmental change

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ABSTRACT

As part of a study of the reasons for declining commercial banana prawn catches in the Weipa area of the Gulf of Carpentaria, and in order to assess whether changes in predator numbers may be a factor influencing prawn numbers, the species composition, numbers and biomasses of fishes in the Embley estuary were re-examined in February 2005 for comparison with the results of a study between 1986 and 1990. The new study duplicated previous methods and used the same sampling sites and the same gear employed during February sampling periods from 1986 to 1990. Overall, the species diversity and catch rates, as well as the numbers of penaeid prawn predators had changed little over 20 years. The overall catch rate for 2005 was $37.4 \text{ g m}^{-1} \text{ h}^{-1}$, not significantly different from the overall catch rate of $32.8 \text{ g m}^{-1} \text{ h}^{-1}$ (SE 6.6) for the period from 1987 to 1989. The results are discussed in relation to environmental factors and climate change, as well as the substantial declines in prawn catches, which had fallen from over 800 tonnes per annum prior to 1998, to about 70 tonnes per annum.

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1. Introduction

The inshore and estuarine fishes of the Embley estuary in tropical north east Australia were previously studied in detail from 1986 until 1990. Gillnets, seine nets and beam trawls were used with the dual purpose of describing the assemblage (Blaber et al., 1989, 1990a) and investigating prawn predation by fish (Salini et al., 1990) in relation to the important commercial penaeid prawn fishery of the adjacent Gulf of Carpentaria. The fish fauna of this large tropical estuary comprised 197 species and the most abundant families were Ariidae, Carcharhinidae, Carangidae, Centropomidae, Haemulidae, Mugilidae and Polynemidae (Blaber et al., 1989). The most important predators of prawns in terms of biomass were the Queenfish, *Scomberoides commersonianus* and the Barramundi, *Lates calcarifer* (Salini et al., 1990).

Until the late 1990s, the Albatross Bay (Weipa region) of the Gulf of Carpentaria was one of the most important areas for banana prawn fishing in the Australian Northern Prawn Fishery, having a long-term average annual catch of about 800 tonnes, with a value of over Au\$12 million. However, since 1998, in each of four consecutive years, catches from Weipa did not exceed 70 tonnes, i.e. less than one tenth of the long-term annual average. This was despite good catches being taken from other regions of the

Northern Prawn Fishery, e.g. in 2001 and 2002, catches in the Karumba region were 2230 and 1837 tonnes, respectively, substantially above the long-term average for the region. A large-scale study into the possible causes of the decline in penaeids in the region was initiated in 2005 (Rothlisberg and Okey, 2006). The significance of predation by fishes on juvenile penaeids in general (Sheridan et al., 1984; Pauly and Palomares, 1987) and particularly in the Embley estuary and Gulf of Carpentaria (Brewer et al., 1990), necessitated as part of this study, a re-assessment of the fish fauna of the Embley estuary to evaluate whether penaeid predators may have changed in abundance since the 1980s. This re-assessment study took place in the wet season in February 2005 and has allowed comparison with previous results from the wet seasons in 1987, 1988 and 1989. In addition to the assessment of any changes in prawn predation, the study provided an invaluable opportunity to look for any changes in the estuarine fish assemblages after a 20-year period.

2. Materials and methods

Most of the significant penaeid predators were caught in the previous study (Blaber et al., 1989; Salini et al., 1990) using gill nets. Hence only gill nets were used in the present investigation. These nets were exact duplicates of those used in 1987, 1988 and 1989 and were deployed at the same sites: areas in the lower, middle and upper reaches, with depths down to 5 m, were sampled with a fleet of 66 m monofilament gill nets of 50, 75, 100, 125 and 150 mm

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