



## Chapter 6

### Marine Fauna

The following chapter covers key areas of the marine fauna of Moreton Bay, and focuses on interactions with the habitats discussed in the previous section. While the division of ecological papers into two sections is somewhat arbitrary, essentially the previous section was about primary producers whilst this section is about consumers of that production.

The four review papers cover the following topics: biodiversity and biogeography, zooplankton, benthic invertebrates, and nekton (fish and prawns). Authors were requested to summarise what is known about their topic, including interactions with habitat and any effects riverine inputs might have on the animals, and to state research priorities.

Our level of knowledge differs markedly from group to group. Information about economically important fish and crustacean species is generally quite detailed, and usually if the organism is of economic significance or has a high public profile then its basic biology is known. On the other hand, even the identification and taxonomy of most less conspicuous faunal groups, let alone their biology and ecology, remains in a limited state. Ecological research into some major groups of crustaceans and into the very small invertebrates, for example meiofauna, is being hampered because workers have no published guides with which to identify them.

The paper reviewing our knowledge of zooplankton covers invertebrates of all sizes that spend time drifting in the sea. This includes not only the animals that undergo their entire life cycle in the water column, but also larval stages of fish and crustaceans, the adults of which are discussed in the other papers. The nekton review is about fish and prawns, and is overtly aimed at reviewing ecological works, without concentrating on fisheries *per se*. The discussion of benthic invertebrates covers invertebrates living in or on the sediment. Some of these invertebrates emerge into the water column at some stage, so there is overlap with both the zooplankton and nekton. Crabs are considered in the paper on benthos, while prawns are covered under nekton. The next paper is about both the biodiversity and biogeography of fish and invertebrates.

The overall picture is one of scientists having a good grasp of pattern (where various types of animals occur) but very little idea about process (what makes the pattern, i.e. the dynamics). In general our understanding of underlying ecology of animals seems less advanced than that of the ecology of plants, particularly the links between nutrients, sediments, and seagrass growth.

Some topics are not covered specifically in these review papers. The fisheries of Moreton Bay have a very high public profile and contribute a disproportionately high fraction of Queensland's total marine harvest (around 50% of the commercial catch of several major species including whiting, bream, mullet, tailor, flathead, garfish, squid and sand crabs): these have been well reviewed elsewhere (Quinn 1993; Williams 1992) and are mentioned here only in an ecological context. Moreton Bay is also an extremely important region for birds. A considerable amount is known about the seabirds and the migratory wading birds that use the Bay (e.g. Blaber & Wassenberg, 1989; Driscoll, 1993), but mention is made here only of their role as predators of benthic invertebrates. Humpback whales enter Moreton Bay occasionally, and spotting them from Point Lookout on North Stradbroke Island as they migrate between the Southern Ocean and north Queensland waters has become a very popular pastime. They are presumed not to be

of major importance in the ecology of the Bay, however, and are also not discussed in detail in this volume. Although each paper covers the effects of human activities on the faunal group under review, the effects of some activities are wide-ranging and, given the extent to which they trouble the minds of managers, might not get appropriate coverage. An example is the modification of intertidal wetland habitats (mangroves and saltmarshes) aimed at controlling insect pests.

Many exciting topics are covered in the non-review papers and, together with the review papers, give a wide coverage of the ecology of the Bay fauna. Topics include two papers on cumaceans, and, on vertebrates: fish larvae of Pumicestone Passage, fish that live in rock pools, a re-examination of the importance of saltmarshes as fish habitat, diet of juvenile whiting (they do eat small greasyback prawns, posing an interesting dilemma for any attempt to artificially increase whiting stocks by seeding), measurement of dispersal of pipefish using otolith microchemistry, ecology of hardyheads, small fish that feed in the water column, humpback dolphin biology and the bottlenose dolphins of Tangalooma on Moreton Island.

Two key issues remain unresolved, and reflect the issues of the greater Bay area, viz.: are fish stocks declining and what proportion of a fish stock should be allocated to commercial rather than recreational fishers? In the closing session of the conference from which this book originated, it was clear that most members of the public present considered that fish were harder to catch now than they were decades ago, and are probably smaller too. This contrasts with the evidence that very large amounts of fish, crustaceans and squid are taken commercially and recreationally from the Bay. The suggestion made at the conference by Col Limpus that the very high numbers of large grazing vertebrates (turtles and dugongs) might indicate a highly productive Bay, is also germane. This brings us to consider just what we hope to achieve in managing human activities in the Moreton Bay catchment. Assuming the Bay has suffered over recent decades from increased eutrophication (an oversupply of nutrients), would a reduction in nutrient input offer us a Bay of plenty or, in fact, a more pristine Bay with less harvestable stock?

The shift towards considering not only the Bay but also its catchment as an integrated system, presents us with opportunities to focus attention on the effects on fauna of changes in the quality or quantity of water arriving from rivers into the Bay. There is little mention of such effects in this volume – an indication of lack of study on these topics. Whilst many effects of riverine input on fauna might be expected to act indirectly via habitat changes, research is also needed into direct links between river quality and Bay fauna, given that many species spend part of their life in both rivers and the Bay.

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## References

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