

Abstract

KEY RESULTS

- ① 13,076 \pm 800 ha of seagrass habitat was mapped in spring (September) 1995 and 13,001 \pm 890 ha in autumn (April) 1996.
- ② Eight species (from 3 families) of seagrasses were found in the survey area during both surveys. A new, undescribed, *Halophila* species was collected in September 1995 from near Stannage Bay.
- ③ Seagrass habitats were located on soft substrates and mostly restricted to intertidal flats. Four main seagrass habitats were identified: large continuous meadows on intertidal banks, patchy meadows restricted to drainage channels and pools on intertidal banks in the southern section of the bay, meadows in narrow bands on some creek banks in the southern section of the bay and inlets and subtidal meadows adjacent to the south-western corner of Townshend Island and in Canoe Passage.
- ④ 12 meadow types (seagrass communities) were identified in Shoalwater Bay. *Zostera capricorni* dominated meadows were more numerous, more extensive and generally much higher above-ground biomass than most other meadows.
- ⑤ Above-ground biomass for most meadow types was significantly higher in September 1995 than April 1996.
- ⑥ Above-ground seagrass biomass varied from 0.04 g DW. m⁻² (*Halodule/Halophila*) to 106.42 g DW. m⁻² (*Zostera capricorni*) in September 1995. In April 1996, above-ground biomasses were significantly lower and ranged from 0.02 g DW. m⁻² (*Halodule/Halophila*) to 25.48 g DW. m⁻² (*Zostera capricorni*).
- ⑦ Seagrasses were found at depths from 0.7 m above MSL to 8.2 m below MSL in September 1995 and 6.5 m below MSL in April 1996.
- ⑧ Commercially important species of prawns were the dominant catch in beam trawl samples at all sites. Juvenile penaeid prawns were more common at Port Clinton and Island Head Creek sites, where substrate types were mud and fine sand. The most abundant species caught in beam trawl samples were western king prawns and true endeavour prawns in September 1995 and April 1996, respectively.
- ⑨ Fish collected by beam trawling in seagrass meadows were generally small sized and mostly gobies at all sites. Commercially importance species of fish were not common in beam trawls in September 1995 (0.2 % of the total catch) or in April 1996 (1 % of the total catch).

KEY ISSUES

- ① Distribution patterns in these surveys were similar to those from the original post-wet broad-scale survey in March 1987, where an estimated 7,000 ha of seagrasses was mapped. A number of intertidal meadows (approximately 1,300 ha in the present surveys) were not surveyed in March 1987 because of the sea conditions at the time.
- ② The area of subtidal seagrass habitat in Shoalwater Bay is small. Strong tidal currents and associated high water turbidity in Shoalwater Bay limit light penetration and therefore the depth to which seagrasses can grow (maximum 8.2 m below MSL). Seagrasses have been recorded to a depth of 53 m in other areas.
- ③ With large tidal ranges seagrasses are exposed for long periods during low tide. This may influence the location of the upper limit of seagrass distribution. In places,

water is retained on the flats at low tide and seagrasses are better protected against desiccation, extending the upper limit to around 0.6 m above MSL.

- ④ The nearest other large seagrass meadows exist 150 km south at Gladstone, patchy meadows 50 km north at Clairview and extensive meadows 300 km north at the Whitsunday Island group. This makes the Shoalwater Bay area regionally important as prawn and fish nursery habitat and as feeding area for dugongs and green sea turtles.
- ⑤ Large numbers of other invertebrates and juvenile fish from beam trawl samples indicate a rich food source for local marine food webs. The Shoalwater Bay seagrass meadows provide a valuable nursery habitat where food and shelter are available for juveniles of commercially and recreationally important species forming the basis of very productive coastal marine communities.
- ⑥ Potential influences on distribution and abundance of seagrasses in Shoalwater Bay (and elsewhere along the Queensland coast) may include freshwater and sediment runoff from the land, in addition to natural fluctuations in plant populations.
- ⑦ These baseline surveys were designed to establish a data set on which monitoring programs can be based to investigate changes in seagrass biomass and distribution. These programs will enable measures of change in area of seagrass habitat and seagrass biomass within meadows to be quantified.