

NSW Marine Habitat Mapping Project

Saltmarsh

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WHAT IS A SALTMARSH?

Saltmarshes are communities of plants and low shrubs that can tolerate high soil salinity and occasional inundation from salt water (Morrisey, 1995). They are characterised by vegetation interspersed with unvegetated patches (salt pans) and often occur landward of mangroves, in the high tide zone (Figure 1) (Adam, 1990).

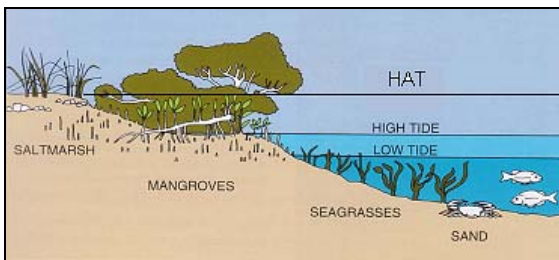


Figure 1. Common habitat zones in an estuary (Adapted from Kailola *et al.* 1993) (*HAT = Highest Astronomical Tide).

SALTMARSH PLANTS

Along the north coast of NSW, saltmarshes are dominated by a few plant species such as red samphire (*Sarcocornia quinqueflora*), salt couch (*Sporobolus virginicus*) and rushes, including *Juncus kraussii* (native) and *Juncus acutus* (noxious) (Copeland, 1992). Saltmarsh species diversity is greater on the south coast of NSW than on the north coast with Jervis Bay being the northern limit for many species (Adam *et al.* 1988).



Figure 2. Red samphire (*Sarcocornia quinqueflora*) (Edgar, 2000).



Figure 3. Salt couch (*Sporobolus virginicus*) (Sainty and Jacobs, 1997).



Figure 4. Sea rush (*Juncus kraussii*) (Sainty and Jacobs, 1997).



Figure 5. Spiny rush (*Juncus acutus*) (Sainty and Jacobs, 1997).

WHERE ARE SALTMARSHES FOUND?

Saltmarshes can be found in estuaries along the whole New South Wales coastline, with the largest area occurring in the Manning Bioregion (Table 1 and Figure 6).

WHY IS SALTMARSH SO IMPORTANT TO FISH?

Saltmarsh is important to fish species by providing a source of food and by providing habitat and shelter when the saltmarsh is inundated at high tide.

Studies by Thomas and Connolly (2001) found that up to 41 species of fish can inhabit tidal

Table 1. Distribution of major areas of saltmarsh in New South Wales (West *et al.* 1985).

Bioregion	No. of Estuaries	Area (km ²)
Tweed/Morton	28	5.5
Manning	18	36.5
Hawkesbury	17	4.9
Batemans	57	10.7
Twofold	13	1.5
Total NSW	133	59.1

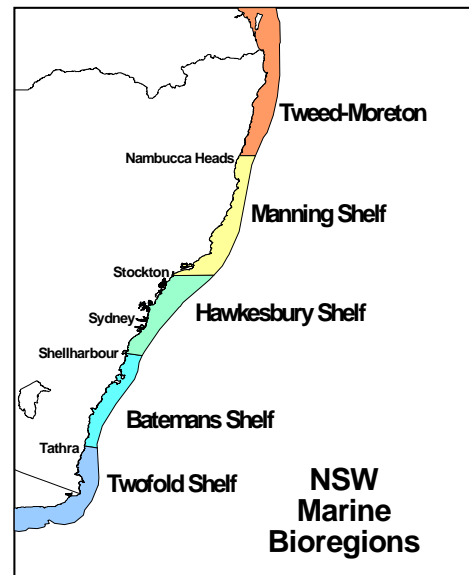


Figure 6. Marine Bioregions in NSW

saltmarsh areas. These included commercial species such as yellowfin bream, sand whiting, various mullets and snub nosed garfish. The most common fish were small species such as perchlets and gobies, which are important in the estuarine food chain as a source of food for larger fish and for birds.

Saltmarsh vegetation provides basic inputs of carbon to estuaries primarily in the form of dead leaves and branches. The carbon material becomes part of the food chain when it is colonised by bacteria and fungi which converts the carbon into more easily digestible carbohydrates and proteins. Tidal currents

disperse this material which can then be taken up by filter feeders such as mussels or oysters and surface feeders such as crabs and mullet (Valiela *et al.* 1978).

Saltmarsh supports a variety of invertebrates, including crabs, prawns, molluscs and insects. The invertebrates are preyed upon by fish during high tides. For example, yellowfin bream feed on crabs and prawns while small fish such as gobies feed on mosquito larvae (Williams, 2001).

Saltmarsh also provides habitat for many migratory bird species, such as the Sharp-Tailed Sandpiper (*Calidris acuminata*) (Smith, 1991).

STATUS OF SALTMARSH IN NSW

Many areas of saltmarsh, particularly those near urban centres, have been lost or become degraded as a result of drainage (floodgates), unrestricted stock access, weed invasion, dumping, stormwater runoff and damage from motor vehicles. Significant losses have also occurred as a result of reclamation and drainage activities (Adam *et al.* 1988; Zann, 1995 & 1996).

Where saltmarsh is restricted along its landward edge by urban development or elevated topography, it can be squeezed against these obstacles by landward-shifting mangroves, and over time, will be replaced by them (Saintilan and Williams, 1999).

Within NSW, saltmarsh area is contracting. A study by Wilton (2002) of mangrove and saltmarsh dynamics in nine estuaries in NSW showed that saltmarsh loss ranged from 12% to 97%, largely due to landward mangrove incursion into saltmarsh habitats.

Williams and Watford (1997) found that within Berowra and Marramarra Creeks, tributaries of the Hawkesbury River, the area of saltmarsh had decreased by 38% between 1941 and 1992. In the Hunter River, the area of saltmarsh has fallen by approximately 52% from 2133ha in 1954 to 1112ha in 1994 (Figure 7) (Williams *et al.* 2000).

Saintilan and Williams (1999) concluded that there are number of factors contributing to the

landward incursion by mangroves into saltmarsh such as:

- changing patterns in annual rainfall
- changes in, or cessation of, agricultural activities
- changes in tidal regimes or sea level
- changes to catchments from urban activities resulting in altered sediment and nutrient inputs and land subsidence.

However, they also found that there was little consistency between the estuaries in the pattern of contributing factors.

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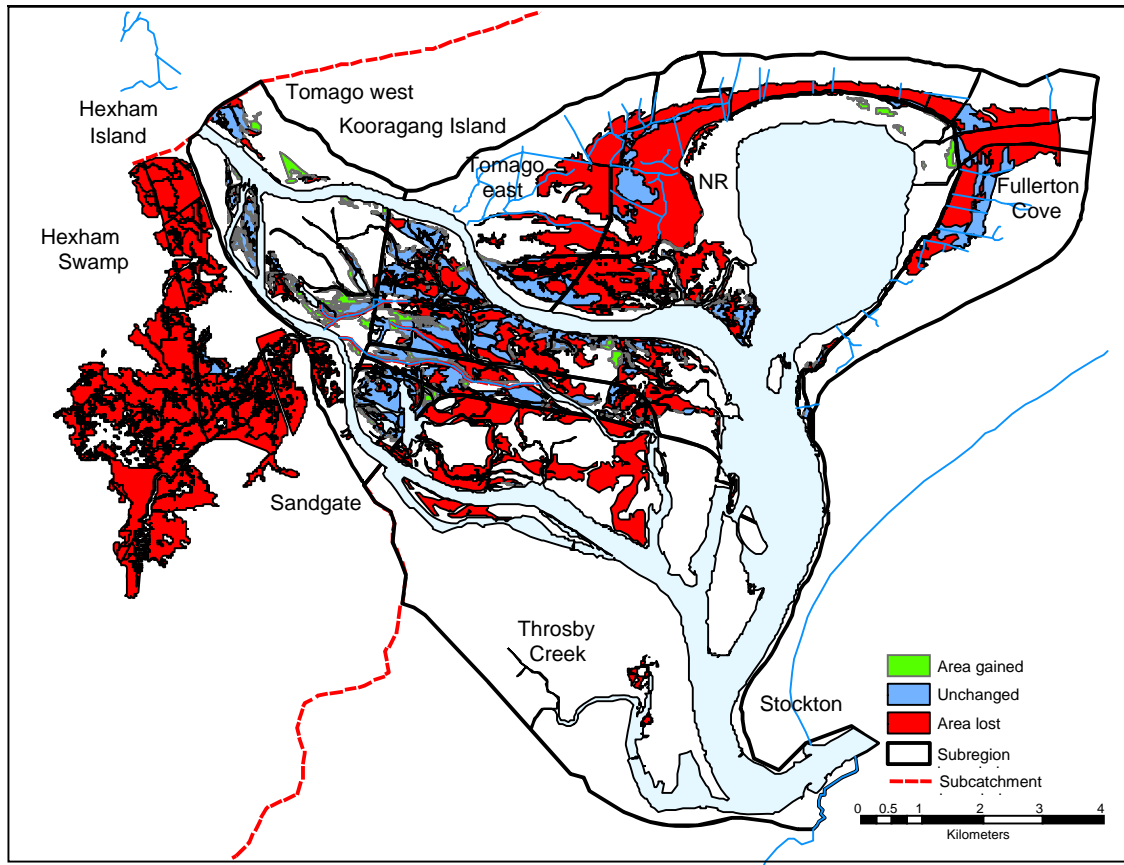


Figure 7. Change in saltmarsh area in the Hunter River (Williams et al. 2000; Morrison, 2001).

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