2.3 Estuarine wetlands: Mangrove and saltmarsh

Description

- Estuarine wetlands include both mangrove and saltmarsh wetlands.
- Occur in the intertidal zone between the highest astronomical tide level and average sea level.
- Mangrove wetlands are dominated by trees.
- Saltmarsh wetlands are dominated by salt- tolerant grasses and succulents with bare areas of saltpan.
- Subject to regular saltwater inundation for short periods of time, and freshwater runoff from land or other wetlands.

Grazing value:

Moderate–poor grazing value

Wetland values and ecosystem services:

Food | Habitat | Water quality | Stabilising soil | Flood mitigation | Social and cultural | Carbon storage

Figure 57 Estuarine wetland with saltmarsh (foreground) and mangrove communities

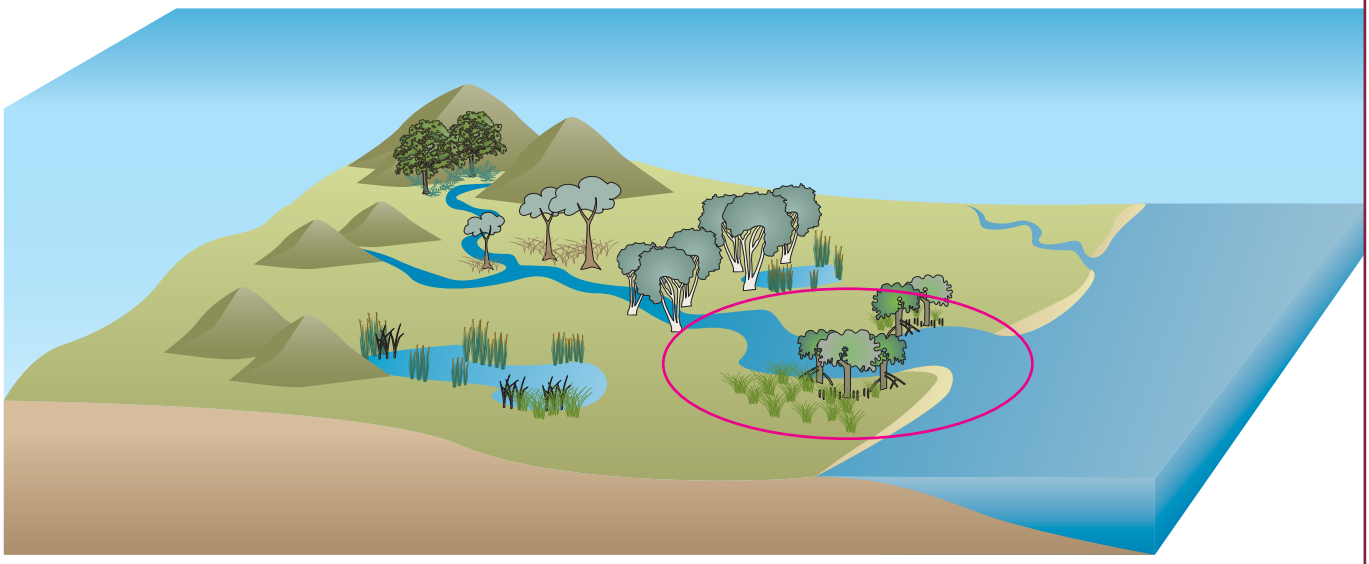


Figure 58 Estuarine wetlands in the landscape

Landform

Low gradient marine and estuarine plains which may have complex patterns of small tidal channels and Gilgai depressions.

Vegetation description

Due to regular saltwater inundation and oxygen-limited soils, the vegetation growing in estuarine wetlands is limited to those plants that are adapted to these harsh conditions.

Mangrove wetlands are dominated by mangrove trees, of which there are 34 different species and 3 hybrids in Queensland. The diversity of mangrove species is greater in the north of the state than the south.

Figure 59 Mangrove wetlands have limited grazing value

Saltmarsh wetlands have few or no trees and mainly consist of grasses and a variety of succulent plants, called samphires. Sedges and rushes, mangrove ferns, mangrove lilies also inhabit estuarine wetlands.

Native pastures

Saltwater/marine couch, water couch, salt water couch, *Ischaemum* spp.

Sown pastures

Pasture species must not be sown in these wetlands.

Weeds

The saline, oxygen-poor soils characteristic of estuarine wetlands limit the types of plants, including weeds that can grow in these wetlands. Weeds include pond apple, rubbervine and groundsel bush.

Soil

Soils are usually deep grey or black clay of marine origin that are highly saline and oxygen-poor, limiting the types of vegetation that can grow. Some estuarine wetlands may occur on sandy or rocky carbonate sediments. The dominant soil types are hydrosols, vertosols and sodosols.

Soil salinities may reach two to three times those of seawater. Surface soils of saltmarsh wetlands are hard and cracking and may have obvious salt crusts. Underlying soil is likely to be Potential Acid Sulfate Soil (PASS) as mud or sand.

Land use and management recommendations

Managing stock access and grazing

Saltmarsh wetlands can be an important part of grazing systems in the coastal areas of North Queensland, providing useful fodder for stock during the dry season. Stock should only graze these wetlands for short periods of time, as freshwater is sparse and to avoid damage to these wetlands.

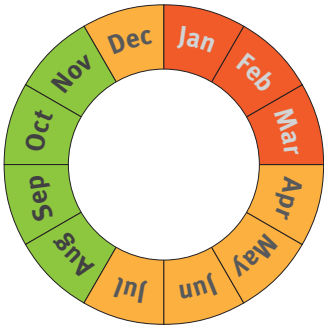
Figure 60 Succulent saltmarsh plants, called samphires, are sensitive to grazing and trampling.

Stock access to estuarine wetlands when wetland soils are moist can lead to soil compaction, pugging, trampling of vegetation and changes to water flow. Grazing should be managed to prevent stock access to estuarine wetlands during the wet season and periods of high tides (generally summer-autumn). Seasonal spelling during this time is also recommended to minimise disturbance of migratory bird feeding and roosting, enable fish movement to breeding and nursery habitats and allow time for vegetation communities to regenerate.

Figure 61 Saltmarsh wetlands are often dominated by saltcouch

Succulent samphire vegetation is sensitive to grazing and trampling and can be slow to recover. Monitoring the vegetation condition and active management of stock access is required to ensure that these vegetation communities are not degraded by grazing.

Indicative grazing seasonality diagram (green managed grazing, red spelling, amber limited grazing). This may vary depending on wetland condition, climate and key management objectives:



Managing water

In estuarine wetlands, different plants grow in different zones depending on the frequency and depth of tidal inundation. Changes to water flow by blocking drainage paths, building levees, constructing access tracks, increasing freshwater inputs and raising or lowering of the soil level can affect tidal inundation and permanently change the plant community. This in turn affects the biodiversity and production values of the wetland.

Access tracks, bunds/levees, watering points and farm infrastructure should be located away from estuarine wetlands to avoid changing water flow.

Estuarine wetlands are regularly flushed with seawater as such the water quality is determined by land use activities in the broader catchment and all land managers have a role in managing sediment and nutrient runoff from their land.

Managing fire

The natural occurrence of fire in estuarine wetlands is low and recovery from fire damage can be slow. As such these wetlands should not be regularly burnt.

Burning adjacent terrestrial land and pastures should be carried out during or after high tide when the wetland soils are moist to minimise damage to these wetlands.

Managing weeds

Weeds tend to occur on the landward edge and areas of higher land in estuarine wetlands. Difficulty of access can make weed identification and control challenging.

Weed control through grazing is of limited benefit as most of the weeds are not grasses, although para grass can be a problem in areas with more freshwater input. Weed control needs to be undertaken in a way that minimises soil compaction and disturbance and prevents any changes in ground level and water flow.

A well planned and managed integrated weed control program is required for the specific weed being targeted. See <www.deedi.qld.gov.au> for more information or contact your local government weed management officer.

Managing animal pests

Feral pigs can disturb estuarine wetlands by digging up and trampling plant material, disturbing wetland soils and predating upon frogs and fish. Pig control programs are recommended in these wetlands to reduce numbers, for advice see <www.deedi.qld.gov.au>.

Other land use limitations

Regulations and approvals apply to works or activities in and around these wetlands, such as:

- removing or disturbing vegetation
- earthworks (filling or excavation)
- construction of infrastructure such as levees, causeways, weirs, roads, culverts or works that alter water flows (drainage works or water storages)
- taking or interfering with water
- disturbance of or tampering with animal breeding places, such as nests or hollows, where protected wildlife breed or raise their young
- works within protected areas, such as declared Fish Habitat Areas, Ramsar listed wetlands and declared Wild Rivers areas.

Figure 62 Earthworks and access tracks in or adjacent to estuarine wetlands can affect water flow, fish passage and wetland plants and as such these works are regulated with approvals required.

There may be other requirements for grazing enterprises, such as maintaining ground cover and land condition and managing weeds and pests. Refer to the Legislation Toolbox for information (www.derm.qld.gov.au/wetlandinfo/site/PPL/WPLST.html).

Underlying soils are PASS. When excavated or drained PASS reacts to air to produce sulphuric acid, which can cause significant environmental and economic impacts.

In Central and North Queensland crocodiles inhabit estuarine wetlands which can pose a threat to humans and stock entering these wetlands.

Conservation features

The vulnerable ant plant and endangered mangrove orchid inhabit estuarine wetlands.

These wetlands provide essential feeding and breeding grounds for water birds and migratory shore birds.

Mangroves and saltmarsh provide vital habitat for fish to breed, grow, feed and shelter. Over 70% of commercially caught fish species as well as most of the fish targeted by recreational fishers use these wetlands at some stage of their lifecycle (Quinn, R.H. 1992).

Relevant land types

Marine plains (FT18), Marine plains and tidal flats (MW07), Marine plains (NG06), Marine plains (SG09).

Regional Ecosystems

There are 29 Regional Ecosystems (RE's) that contain estuarine wetlands: mangrove and saltmarsh:

- Gulf Plains – 2.1.2, 2.1.3, 2.1.4
- Cape York Peninsula – 3.1.1, 3.1.1a-c, ***3.1.2****, 3.1.3, ***3.1.4****, 3.1.5, 3.1.6, ***3.1.7****, ***3.2.30****
- Wet Tropics – 7.1.1, ***7.1.2****
- Central Queensland Coast – 8.1.1, ***8.1.2****, ***8.1.3****
- Brigalow Belt – 11.1.1, 11.1.2, 11.1.4, 11.1.4a-e
- South-east Queensland – 12.1.2, 12.1.3

* Classified as 'of concern' or 'endangered'

References

- Department of Primary Industries and Fisheries (2009) *Land types of Queensland*. State of Queensland (Department of Primary Industries and Fisheries), Brisbane.
- Jaensch, R. (2005) *Wetland Management Profile – Saltmarsh Wetlands*. Queensland Wetlands Program, Brisbane.
- Johns, L. (2006) *Field guide to common saltmarsh plants of Queensland*. State of Queensland (Department of Primary Industries and Fisheries), Brisbane.
- Joyce, K. (2006) *Wetland Management Profile – Mangrove Wetlands*. Queensland Wetlands Program, Brisbane.
- Lovelock, C. (1993) *Field guide to the mangroves of Queensland*. Australian Institute of Marine Science, Australia.
- Quinn, R.H. (1992) *Fisheries Resources of the Moreton Bay region*. Queensland Fish Management Authority, Brisbane

Plant species commonly found in estuarine wetlands: Mangrove and saltmarsh

Scientific name	Common Name
Grasses	
Cynodon dactylon	Green couch
Ischaemum spp.	
Leptocholoa fusca formerly *Diplachne fusca*	Brown beetle grass
Panicum decompositum	Native millet
Paspalum distichum	Water couch
Paspalum vaginatum	Salt water couch
Phragmites australis	Common reed
Sporobolus virginicus	Saltwater/marine couch
Xerochloa imberbis	Swamp rice grass
Zoysia macrantha	Prickly couch
Sedges and Rushes	
Cyperus polystachyos	Bunchy sedge
Cyperus victoriensis	Yelka, flat-sedge
Cyperus spp.	Sedge
Eleocharis dulcis	Bulkuru
Fimbristylis spp.	Rusty sedge
Isolepis cernua	Nodding club rush
Isolepis nodosa	Knobby club rush
Juncus kraussii	Jointed rush
Juncus bufonius	Toad rush
Schoenoplectus spp.	Schoenoplectus
Triglochin striata	Streaked arrow grass
Typha domingensis	Cumbungi, bulrush
Succulents	
Batis argillicola	Batis
Carpobrotus glaucescens	Pigface
Dissocarpus biflorus	Twin flower saltbush
Dysphania littoralis	Red crumbweed
Enchylaena tomentosa	Ruby saltbush
Halosarcia spp.	Glassworts
Portulaca spp.	Pigweed
Salsola kali	Prickly saltwort/soft roly-poly
Sarcocornia quinqueflora	Bead weed
Sesuvium potulacastrum	Sea purslane
Suaeda spp.	Seablite
Tecticornia australasica	Grey samphire
Broadleaf herbs and shrubs	
Acrostichum speciosum	Mangrove fern
Atriplex semibaccata	Creeping saltbush

Scientific name	Common Name
Broadleaf herbs and shrubs (continued)	
Crinum pedunculatum	Mangrove lily
Limonium spp	Native sea lavender
Samolus repens	Creeping bushweed
Trees	
Aegialitis annulata	Club mangrove
Aegiceras corniculatum	River mangrove
Avicennia marina	Grey mangrove
Bruguiera spp.	Orange mangrove
Ceriops spp.	Yellow mangrove
Excoecaria agallocha	Blind-your-eye mangrove
Lumnitzera spp.	Black mangrove
Osbornia octodonta	Myrtle mangrove
Rhizophora spp.	Red or tall-stilted mangrove
Xylocarpus spp	Cedar or cannonball mangrove
Introduced species and weeds	
Annona glabra	Pond apple
Baccharis halimifolia	Groundsel Bush
Cryptostegia grandiflora	Rubber vine