

2.1 Coastal grass, sedge and herb swamps (floodplain and non-floodplain)

Description

- Temporarily or periodically waterlogged, from a period of a few weeks to months.
- Dominated by grasses and sedges, with little or no tree cover.
- Predominantly fresh water, but can have saline influence.
- Often associated with other wetlands through surface water flow or groundwater exchange.
- These wetlands naturally dry or draw down during the dry season. Wetland vegetation and fauna may also become dormant at this time, making these wetlands hard to distinguish during the dry season.

Grazing value:



Good grazing value

Wetland values and ecosystem services:



Food



Water security



Flood mitigation



Water quality



Integrated pest management



Social and cultural



Carbon storage



Habitat



Figure 44 Grass, sedge and herb swamp near Giru

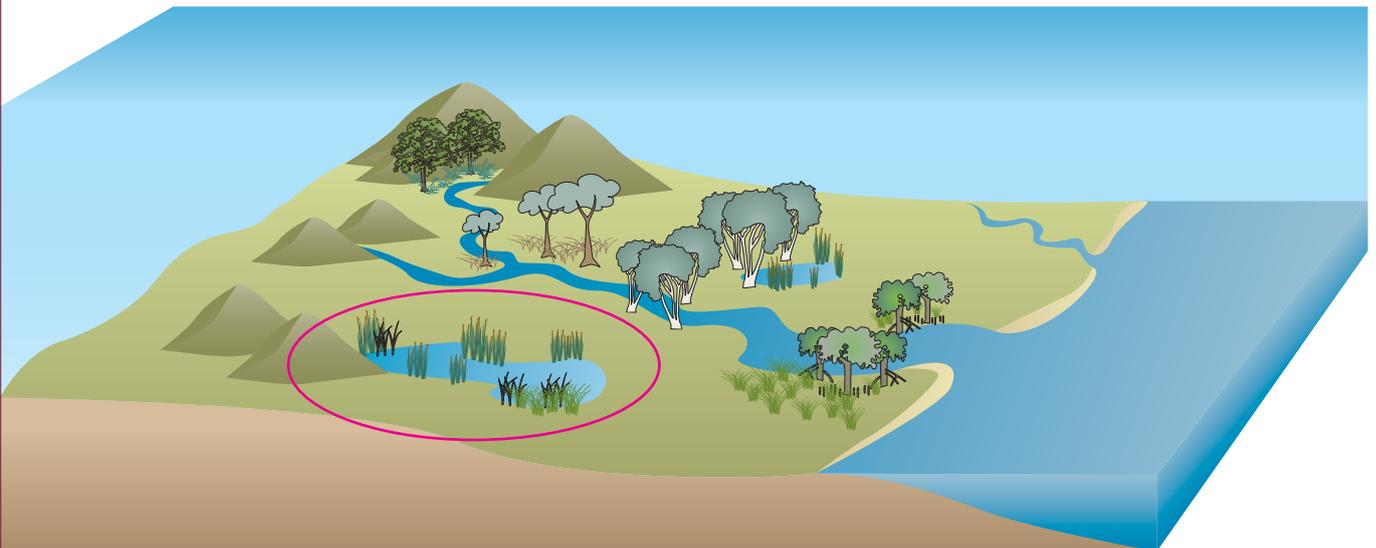


Figure 45 Coastal grass, sedge and herb swamp in the landscape

Landform

Minor basins, small depressions and poorly drained flats on marine or alluvial plains with a gentle or negligible slope.

Vegetation description

Trees are generally sparse with vegetation mainly consisting of grasses, rushes and sedges. Sedges and rushes dominate grass-sedge wetlands in the east coast catchments and grasses tend to dominate wetlands in the Gulf of Carpentaria catchments. The composition of wetland plant species varies depending on the catchment, saline influence, water regime and association with other land types.

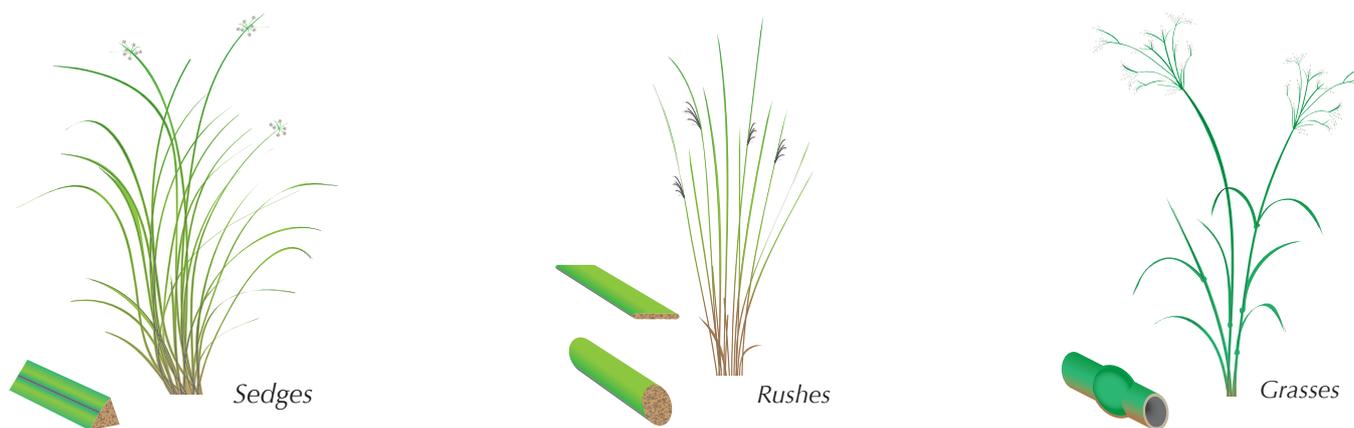


Figure 46 Identification of sedges, rushes and grasses

Native pastures

Queensland bluegrass, green couch, cup grass, swamp rice grass, wild rice, brown beetle grass, water couch, native millet, windmill grass and curly windmill grass.

The nutritional (energy, protein and mineral) values of wetland plants vary significantly between different plant species and seasons. Visual monitoring of stock health, stock grazing patterns and measuring the nutritional value of the pastures for stock, for example through Near Infrared Reflectance Spectroscopy (NIRS) of dung, could help evaluate the feed quality of wetland plants.

Sown pastures

It is not recommended that any pasture species be sown in these wetlands.

Exotic pasture grasses and weeds

Olive hymenachne, paragrass, aleman grass, giant rat's tail grass, awnless barnyard grass, lippia, pond apple, water hyacinth, salvinia, cabomba and water lettuce.

Exotic pasture grasses are well established in many coastal grass, sedge and herb swamps and must not be introduced into new wetland areas due to their invasive nature.

Soil

Deep, gradational clay soils. Main soil types include hydrosols, organosols, vertosols and dermosols.

Heavy, dark clays originally deposited by streams or the ocean, through to loamy soils.

Surface soils are dark, containing organic material and may crack.

Underlying soil may be Potential Acid Sulfate Soil (PASS) as peat, sand or mud.

Land use and management recommendations

Managing stock access and grazing

Well managed grazing can provide production benefits whilst maintaining biodiversity. Most wetland plants flower and set seed during summer and autumn and some rushes and sedges die back during the dry season. Seasonal grazing with a flexible or rotational grazing regime during the dry season can:

- provide useful feed during the dry season
- help to control exotic pasture grasses
- promote desirable native pasture species.

Spelling or very light stocking in and around these wetlands during the wet season will reduce pugging of wetland soils, allow wetland plants to seed and wildlife to breed. Grazing regimes should be determined depending on key management objectives, such as maintaining biodiversity, weed control or fire management.

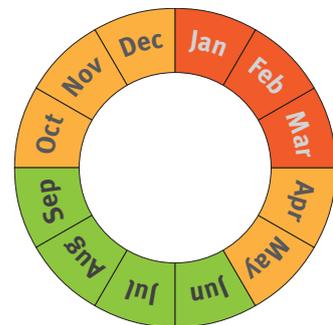


Figure 47 A rotational grazing strategy is applied to this grass, sedge and herb swamp paddock

Grazing can be managed through:

- fencing to allow specific grazing management in wetland paddocks and/or
- rotational grazing, seasonal spelling and seasonally light stocking rates and/or
- stocking with lighter livestock, e.g. weaners and/or
- strategically placed off-stream watering points, cattle camps and supplements.

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



* For example, if the management objective is to control exotic pasture grasses in the seasonal dry tropics, light stocking over the wet season could be appropriate.

Managing water

Drainage works, roads, levee-banks, floodgates, ponded pastures and dams can cause significant changes to wetland vegetation communities, their grazing value and the animals that these wetlands support.

Changes to water flow can make some areas of a wetland wetter while other areas get drier. This impacts plant and animal communities, water quality and natural fish movement between wetlands.

Ponded pastures to create dry season forage areas must not be constructed in or near natural wetlands.

Small, shallow water holes remaining at the end of the dry season are more susceptible to water quality degradation from stock congregating at the waterhole, defecating, urinating and pugging the wetland soils. These residual pools provide vital refuges for fish and wildlife and the use of these wetlands by stock should be closely monitored and controlled to minimise habitat disturbance and maintain water quality.



Figure 48 Cattle congregate around remaining water holes at the end of the dry season. Source: DERM

Managing fire

Using fire as a management tool requires careful planning and management to ensure both grazing and biodiversity objectives are achieved. The frequency, intensity and seasonality of burns will depend on the climatic region and management intent, for example to control weeds, promote desirable grazing species or even out grazing pressure.

Cool mosaic fires early in the dry season will ensure that peat soils remain moist and the bases of wetland plants are not damaged. In bulkuru and wild rice dominated wetlands, burning during the mid-late dry season (June to October) minimises fire damage, as the reeds and sedges have died back to subsoil bulbs or seeds.

Managing weeds

Exotic pasture grasses and weeds dominate many of these wetlands, especially in areas with high nutrient inputs and/or where saline water has been excluded through levees or bunds.

Exotic pasture grasses, particularly para grass and olive hymenachne can completely dominate wetlands, causing:

- exclusion of native reeds, sedges and grasses which provide important food and habitat for native fauna
- degradation of water quality and habitat for fish and aquatic animals and
- smothering of the water surface preventing access for boating and fishing.

An appropriate level of grazing pressure, combined with fire (in seasonally dry regions), can help reduce the dominance of these grasses. The effectiveness of this strategy varies between the type of pasture grass, climatic region and grazing management.

Complete grazing exclusion is not recommended in wetlands with exotic pasture grasses. A lack of grazing pressure allows exotic pasture grasses to smother the wetland degrading the wetlands' ecosystem services and values. Maintaining grazing pressure by light stocking throughout the wet season and moderate-heavy grazing pressure at the end of the dry season can be effective in controlling the dominance of exotic pasture grasses, particularly where there is seasonal draw down of water levels.

Control of weeds requires an integrated management approach using a range of weed prevention and control techniques. The Pest Management Officer from your local government should be contacted for advice. For more information see <www.deedi.qld.gov.au>.



Figure 49 Grazing can help reduce the dominance of exotic pastures to maintain wetland ecosystem services and values.

Managing animal pests

Feral pigs can cause significant damage to wetlands by disturbing soils, polluting the water and eating tubers and seeds of native wetland plants. Pigs can carry bacteria that may cause vibriosis and leptospirosis, which can be passed on to cattle through water. Pigs can also introduce weed seeds from neighbouring properties.

A strategic pig control program to reduce numbers is recommended. For advice, see <www.deedi.qld.gov.au>.



Figure 50 Pig damage, Lakefield National Park. Source: DERM

Other land use limitations

Regulations and approvals may 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.

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

Crocodiles are a safety consideration for humans and stock in central and north Queensland.

Conservation features

Five plant species occurring in these wetlands are listed as vulnerable or endangered. The grasses, sedges and rushes that dominate these wetlands provide food (seeds and tubers) as well as vital nesting and breeding sites for many waterbirds, such as magpie geese, brolga and ducks. Egrets and insects inhabiting these wetlands may play a role in integrated pest management.

Numerous fish species, including barramundi and mullet, utilise these wetlands as nursery areas. Eels, frogs, turtles and crayfish are also common.

Relevant land types

Coastal grass, sedge and herb swamps can occur in various land types, however the only land type specific to this wetland is: Coastal wetlands (MW05).

Regional ecosystems

There are 16 Regional Ecosystems (RE's) that contain coastal grass, sedge and herb swamps:

- Gulf Plains – 2.3.1, **2.3.2***, 2.3.34×31
- Cape York Peninsula – 3.3.58, 3.3.61, 3.3.63, 3.3.65
- Wet Tropics – **7.1.3***, **7.3.1***
- Central Queensland Coast – **8.1.4***, **8.3.4***
- Brigalow Belt – **11.1.3***, **11.3.27×1a, b & c***
- South-east Queensland – **12.3.8***

* Classified as 'of concern' or 'endangered'.

Further information and references

For information on the use of late dry season grazing and fire to manage exotic pasture grasses in the seasonal dry tropics see:

- Tait, J. (2010) *Guidelines for the use of grazing for management of exotic pasture weeds in wetland and riparian habitats*. WetlandCare Australia, NSW
- Adams, E. *Tedlands Station Wetlands Project – Grazing and Fire Regime Management*. Information Bulletin No. 1 for the GBR Coastal Wetland Protection Program. Mackay Whitsunday NRM Group.
- Department of Primary Industries and Fisheries (2009) *Land types of Queensland*. State of Queensland (Department of Primary Industries and Fisheries), Brisbane.
- Holmes, S., Speirs, S., Berney, P. and Rose, H. (2009) *Guidelines for grazing in the Gwydir Wetlands and Macquarie Marshes*. NSW Department of Primary Industries, NSW.
- Grice, T. (2009) *Protection and restoration of degraded seasonal wetlands in northern Australia*. Final Report to NQ Dry Tropics.
- Jaensch, R. (2005) *Wetland Management Profile – Coastal Grass-sedge Wetlands*. Queensland Wetlands Program, Brisbane.

Plant species commonly found in coastal grass, sedge and herb swamps (floodplain and non-floodplain)

Scientific name	Common Name
Grasses	
<i>Chloris</i> spp.	Windmill grass
<i>Cynodon dactylon</i>	Green couch
<i>Dichanthium sericeum</i>	Queensland bluegrass
<i>Echinochloa inundata</i>	Marsh/channel millet
<i>Enteropogon acicularis</i>	Curly windmill grass
<i>Eriochloa</i> spp.	Cup or spring grass
<i>Heteropogon</i> spp.	Speargrass
<i>Hymenachne acutigluma</i>	Hymenachne
<i>Ischaemum</i> spp.	
<i>Leersia hexandra</i>	Swamp rice grass
<i>Leptochloa digitata</i>	Umbrella cane grass
<i>Leptochloa fusca</i> formerly <i>Diplachne fusca</i>	Brown beetle grass
<i>Oryza meridionalis</i>	Wild rice
<i>Panicum decompositum</i>	Native millet
<i>Paspalidium jubiflorum</i>	Warrego (summer) grass
<i>Paspalum distichum</i>	Water couch
<i>Paspalum vaginatum</i>	Salt water couch
<i>Phragmites australis</i>	Common reed
<i>Pseudoraphis spinescens</i>	Spiny mudgrass
<i>Sporobolus caroli</i>	Fairy grass
<i>Sporobolus virginicus</i>	Saltwater/marine couch
<i>Xerochloa imberbis</i>	Swamp rice grass
Sedges and Rushes	
<i>Baumea articulata</i>	Jointed twigrush
<i>Baumea rubiginosa</i>	Soft twigrush
<i>Bolboschoenus fluviatilis</i>	Marsh club-rush
<i>Carex appressa</i>	Tall sedge
<i>Cyperus difformis</i>	Dirty dora/ rice sedge
<i>Cyperus digitatus</i>	Sedge
<i>Cyperus exaltatus</i>	Tall flatsedge/giant sedge
<i>Cyperus polystachyos</i>	Bunchy sedge
<i>Cyperus trinervis</i>	Sedge
<i>Cyperus victoriensis</i>	Yelka, flat-sedge
<i>Cyperus</i> spp.	Sedge
<i>Eleocharis dulcis</i>	Bulkuru
<i>Eleocharis plana</i>	Ribbed spikerush
<i>Eleocharis sphacelata</i>	Tall spikerush
<i>Eleocharis</i> spp.	Spikerush
<i>Fimbristylis</i> spp.	Rusty sedge
<i>Juncus kraussii</i>	Jointed rush
<i>Juncus bufonius</i>	Toad rush
<i>Lepironia articulata</i>	
<i>Philydrum lanuginosum</i>	Frogsmouth
<i>Schoenoplectus</i> spp.	Schoenoplectus
<i>Scleria</i> spp.	
<i>Triglochin striata</i>	Streaked arrow grass
<i>Typha domingensis</i>	Cumbungi, bulrush

Scientific name	Common Name
Legumes	
<i>Aeschynomene indica</i>	Buddha pea
<i>Medicago</i> spp.	Burr/Barrel medic
<i>Sesbania cannabina</i>	Sesbania pea
Succulents	
<i>Salsola kali</i>	Prickly saltwort/soft roly-poly
Broadleaf herbs and shrubs	
<i>Ludwigia peploides</i>	Water primrose
Trees	
<i>Corypha utan</i>	Palm
<i>Eucalyptus</i> spp.	Gum tree
<i>Excoecaria parvifolia</i>	Gutta-percha
<i>Lophostemon</i> spp.	Swamp box
<i>Melaleuca</i> spp.	Paperbark or tea-tree
<i>Pandanus</i> spp.	Screw pine
<i>Xanthorrhoea</i> spp.	Grass tree
Waterlillies and other aquatic plants	
<i>Blyxa</i> spp.	Blyxa
<i>Ceratophyllum demersum</i>	Hornwort
<i>Ceratopteris thalictroides</i>	Water fern
<i>Hydrilla verticillata</i>	Hydrilla
<i>Marsilea</i> spp.	Nardoo
<i>Monochoria cyanea</i>	Bog lily
<i>Myriophyllum</i> spp.	Water milfoil
<i>Nelumbo nucifera</i>	Pink lotus
<i>Nymphaea</i> spp.	Waterlillies
<i>Nymphoides</i> spp.	Marshworts
<i>Ottelia alismoides</i>	Ottelia
<i>Ottelia ovalifolia</i>	Swamp lily
<i>Potamogeton</i> spp.	Curly pondweed
<i>Utricularia gibba</i>	Yellow bladderwort
<i>Vallisneria</i> spp.	Ribbonweed
Introduced species and weeds	
<i>Annona glabra</i>	Pond apple
<i>Brachiaria mutica</i>	Paragrass
<i>Cabomba caroliniana</i>	Cabomba
<i>Echinochloa colona</i>	Awnless barnyard grass
<i>Echinochloa polystachya</i>	Aleman grass
<i>Eichhornia crassipes</i>	Water hyacinth
<i>Hymenachne amplexicaulis</i>	Olive hymenachne
<i>Phyla canescens</i>	Lippia
<i>Pistia stratiotes</i>	Water lettuce
<i>Salvinia molesta</i>	Salvinia
<i>Sporobolus natalensis</i>	Giant rats tail grass