

The following section features ten predominant habitat types on the West Coast of the Eyre Peninsula, South Australia. It provides a description of each habitat type and the native plant and fauna species that commonly occur there. The fauna species lists in this section are not limited to the species included in this publication and include other coastal fauna species. Fauna species included in this publication are printed in bold. Information is also provided on specific threats and reference sites for each habitat type.

The habitat types presented are generally either characteristic of high-energy exposed coastline or low-energy sheltered coastline. Open sandy beaches, non-vegetated dunefields, coastal cliffs and cliff tops are all typically found along high energy, exposed coastline, while mangroves, sand flats and saltmarsh/samphire are characteristic of low energy, sheltered coastline.



Coastal Dune Shrublands

NATURAL DISTRIBUTION

Found throughout the coastal environment, from low beachfront locations to elevated clifftops, wherever sand can accumulate.

DESCRIPTION

This habitat type is associated with sandy coastal dunes occurring along exposed and sometimes more sheltered coastline. Dunes are created by the deposition of dry sand particles from the beach by wind, and consist of raised sections of sand (dunes), usually several metres thick, interspersed by valleys (swales) that run parallel to the shore. Dunes and their associated plant communities act as buffers and protect inland communities from storm tides, waves and wind. Dunes are highly vulnerable to erosion and may shift considerably in response to wind.

Dune vegetation traps sand and stabilises sediment that decreases vulnerability to erosion. A number of plants act as colonising species in unvegetated areas, including pigface (*Disphyma* spp. and *Carpobrotus* spp.) and spinifex (*Spinifex hirsutus*), which have upright stems and sand trapping rhizomes. These colonising species increase shade, reduce sand temperature, reduce wind movement, lower evaporation rates and catch wind blown seeds, creating conditions that are suitable for shrubs to establish. Coastal

shrublands of larger vegetation occur on more stable dunes and cliff-top dunes with deep stable sand. Most large dune shrublands will be composed of a mosaic of transitional vegetation patches ranging from bare sand to dense shrub cover.

The understory generally consists of moderate to high diversity of low shrubs, sedges and groundcovers. Understory diversity is often driven by the position and aspect of the dune slope. Fresh and saline soaks can also influence local variations in vegetation.

This diverse and sheltered habitat provides important food and nesting resources for many small and large reptile species, some shorebirds and many passerines. In some parts of the coastline these dune shrublands are the only strip of remnant vegetation, between the beach and inland farmland, making them important corridors for the movement of these animals along the coast.

EXTENT: 46,577 hectares

PROTECTED: 18,610 hectares (40%)

REFERENCE AREAS

Sceale Bay, Corvisart Bay, Fowlers Bay, Chadinga CP, Acraman Creek CP, Coffin Bay NP, Lake Newland CP, Lincoln NP, Venus Bay CP.











Main: Coastal Dune Shrubland Top Left: Blue-breasted Fairy-wren (Malurus pulcherrimus) Top Right: Heath Goanna (Varanus rosenbergi) Bottom Left: Common Death Adder (Acanthophis antarcticus) Bottom Right (left): Singing Honeyeater (Lichenostomus virescens) Bottom Right (right): Habitat distribution map

THREATS

These areas are commonly threatened by residential and recreational pressures. In particular, off-road vehicles, inappropriate access tracks and weed invasion are significant threats to coastal dunes. Dune shrublands are vulnerable to erosion, especially in conjunction with the loss of vegetation. Sea level rise threatens coastal dune communities unable to colonise adjacent inland areas. Foxes, cats and unleashed dogs also have an impact on ground dwelling and nesting animals through predation or disturbance.

COMMON NATIVE PLANT SPECIES

Upperstorey Species: Drooping Sheoak (*Allocasuarina verticillata*), Coastal White Mallee (*Eucalyptus diversifolia*).

Midstorey Species: Coastal Wattle (*Acacia longifolia ssp. sophorae*), Coast Beard-heath (*Leucopogon parviflorus*), Coast Daisy-bush (*Olearia axillaris*).

Understorey Species: Saltbush (*Atriplex* spp., *Enchylaena tomentosa*), Grasses (*Austrostipa* spp., *Dianella* spp., *Poa* spp., *Spinfex* spp.), Ground covers including Native Pigface (*Carpobrotus rossii*), Cushion Fanflower (*Scaevola crassifolia*) and Coast Cushion Bush (*Leucophyta brownii*).

Refer to page 10 in Native Vegetation of the Eyre Peninsula, South Australia (Greening Australia).

BIRDS

Nankeen Kestrel (*Falco cenchriodes*), **Rock Parrot (***Neophema petrophila***)**, Superb Blue-wren (*Malurus cyaneus*), **Blue-breasted Fairy-wren** (*Malurus pulcherrimus*), Southern Emu-wren

(Stipiturus malachurus parimeda), White-browed Scrubwren (Sericornis frontalis), Singing Honeyeater (Lichenostomus virescens), Spiny-cheeked Honeyeater (Acanthagenys rufogularis), Red Wattlebird (Anthochaera carunculata), White-browed Babbler (Pomatostomus superciliosus), Grey Shrike-thrush (Colluricincla harmonica), Silvereye (Zosterops lateralis), Richard's Pipit (Anthus novaeseelandiae).

MAMMALS

Short-beaked Echidna (*Tachyglossus aculeatus*), Western Grey Kangaroo (*Macropus fuliginosus*), Australian Sea-lion (*Neophoca cinerea*), Southern Freetail-bat (*Mormopterus* sp.), White-striped Freetail-bat (*Tadarida australis*), Lesser Long-eared Bat (*Nyctophilus geoffroyi*), Gould's Wattled Bat (*Chalinolobus gouldii*), Chocolate Wattled Bat (*Chalinolobus morio*), Southern Forest Bat (*Vespadelus regulus*).

REPTILES

Heath Monitor (Varanus rosenbergi), Sand Monitor (Varanus gouldii), Bight Coast Ctenotus (Ctenotus euclae), Marbled Gecko (Christinus marmoratus), Four-toed Earless Skink (Hemiergis peronii), Bight slider (Lerista arenicola), Long-legged Slider (Lerista microtis), Mallee-snake Eye (Morethia obscura), Great Bight Cool-skink (Pseudemoia baudini), Painted Dragon (Ctenophorus pictus), Common Death Adder (Acanthophis antarcticus), Master's Snake (Drysdalia mastersii), Eastern Tiger Snake (Notechis scutatus).



Dunefields (non-vegetated)

NATURAL DISTRIBUTION:

This habitat type is associated with sandy coastal dunes occurring along exposed coastline.

DESCRIPTION

Dunefields are large 'blowouts' or unvegetated areas within the sand dune environment. The vegetation loss may have been triggered by natural or human-associated disturbance events, including fire and severe storms or a combination of factors. It is important to understand that dunefields are a part of the natural mosaic of transitional states in the larger coastal sand dune environment and not a modern creation. Given enough time and suitable conditions dunefields usually regain vegetation cover. Dunefields only become a concern when their expansion significantly outweighs stabilisation or impacts on threatened species.

Dunefields predominantly consist of highly mobile sand particles which are prone to wind erosion and are therefore highly dynamic. Occasionally these sands will erode down to a more stable substrate such as heavier soils or calcrete.

Due to the unstable surface and absence of vegetation, this habitat type provides limited food resources for fauna species. However, large blowouts in unvegetated dunes provide important nesting habitat for the nationally Vulnerable Hooded Plover (*Thinornis rubricollis*), Red-capped Plover (*Charadrius ruficapillus*) and Australian Pied Oystercatcher (*Haematopus longirostris*).

EXTENT: 20,779 hectares

PROTECTED: 13,165 hectares (63%)

REFERENCE AREAS

Point James, Bielamah Sands, Cantaby Sands, Nantiby Sands, Coffin Bay NP, Lake Newland CP, Chadinga CP, Wahgunyah CP, Fowlers Bay CP.

THREATS

These areas may become more common as a result of disturbance to other habitats which facilitate erosion. This habitat's natural stabilising processes can be interrupted or reversed by disturbance from off road vehicles, dune surfing and domestic stock access. These disturbances can also destroy nest sites of ground nesting birds. Pest animals such as foxes and cats also prey on these birds.











Main: Dunefield with isolated Sea Spurge (Euphorbia paralias) Top Left: Dunefields separated by shrublands on limestone Top Right: Hooded Plovers (Thinornis rubricollis) Bottom Left: Dunefield showing vehicle disturbance Bottom Right (left): Bight Slider (Lerista arenicola) Bottom Right (right): Habitat distribution map

COMMON NATIVE PLANT SPECIES

There is generally no vegetation in dunefield habitats. Sparse Pigface (*Carpobrotus rossii*) or the introduced Sea Spurge (*Euphorbia paralias*) may occur.

BIRDS

Red-capped Plover (*Charadrius ruficapillus*), Hooded Plover (*Thinornis rubricollis*), Australian Pied Oystercatcher (*Haematopus longirostris*).

MAMMALS

Southern Freetail-bat (*Mormopterus* sp.), White-striped Freetail-bat (*Tadarida australis*), Lesser Long-eared Bat (*Nyctophilus geoffroyi*), Gould's Wattled Bat (*Chalinolobus gouldii*), **Chocolate Wattled Bat** (*Chalinolobus morio*), Southern Forest Bat (*Vespadelus regulus*).

REPTILES

Bight Slider (Lerista arenicola).



Open Sandy Beaches

NATURAL DISTRIBUTION

Open sandy beaches are found along much of the west coast of the Eyre Peninsula, primarily in high energy coastal environments.

DESCRIPTION

This habitat type is primarily associated with exposed conditions including high wave energy, strong winds and large tidal movements, however it also occurs in sheltered areas. Open sandy beaches are situated above the intertidal zone only being inundated on high tides or storm surges. Small rocky reefs, exposed at low tide, are often found offshore. Open sandy beaches link the deeper water and sand flats of the lower elevations to the higher dune habitats. Sand is the main substrate in this community, and consists of sediment particles that are larger than those found in sand flats.

Open sandy beaches are a continuously changing environment, with strong currents and waves constantly eroding and rebuilding the shoreline. This process may also create offshore sandbars and spits that protect the beach from erosion. Strong winds continuously erode the beach zone and create dune systems by depositing the dry sand particles from the beach into inland areas. Large open stretches of sandy beaches are often interrupted by rocky headlands.

The constantly moving substrate is a difficult habitat for plants to colonise and there is generally no vegetation cover in this habitat type. Piles of seaweed and debris, or wrack, are deposited on the beach by wave and tidal action, and provide food and important habitat for intertidal organisms.

Despite the lack of vegetation, there is a biodiverse microscopic community. Large numbers of microscopic phytoplankton, algae and bacteria live in the sand and are consumed by small invertebrates such as amphipods and insect larvae. Molluscs, crustaceans and polychaete worms also live in the sand and are eaten by foraging shorebirds. Larger animals, including sea-lions, gulls, terns and pelicans, can be found resting and breeding on open sandy beaches.

EXTENT: 653 km of coastline

PROTECTED: 218 km of coastline (33%)

REFERENCE AREAS

Gunyah Beach, Almonta Beach, Sensation Beach, Convention Beach, Bielamah Sands, Corvisart Bay, Sceale Bay, Streaky Bay, Smoky Bay, Coffin Bay, Chadinga CP, Fowlers Bay CP, Lake Newland CP, Wahgunyah CP.











Main: Open Sandy Beach at Sleaford Bay Top Left: Double-banded Plover (Charadrius bicinctus) Top Right: Hooded Plover (Thinornis rubricollis) Bottom Left: Red-capped Plover (Charadrius ruficapillus) Bottom Right (left): Australian Pied Oystercatcher (Haemanatopus longirostris) Bottom Right (right): Habitat distribution map

THREATS

These areas are commonly threatened by recreational access, especially vehicles and dogs, which can destroy the nests of ground nesting shorebirds, kill chicks and disrupt breeding and feeding activities. Foxes and cats have similar impacts. Coastal development can also eliminate areas of habitat or change local sand deposition regimes which alters the beach's profile. Maritime rubbish can also pose risks to animals, through entanglement or intestinal obstruction.

COMMON NATIVE PLANT SPECIES

There is generally no vegetation associated with open sandy beaches.

BIRDS

Cape Barren Goose (Cereopsis novaehollandiae), Australian Pelican (Pelecanus conspicillatus), White-faced Heron (Egretta novaehollandiae), Eastern Reef Egret (Egretta sacra), Nankeen Kestrel (Falco cenchroides), Eastern Osprey (Pandion cristatus), White-bellied Sea-eagle (Haliaeetus leucogaster), Australian Pied Oystercatcher (Haematopus longirostris), Sooty Oystercatcher (Haematopus fuliginosus), Grey Plover (Pluvialis squatarola), Red-capped Plover (Charadrius ruficapillus), Double-banded Plover (Charadrius bicinctus), Hooded Plover (Thinornis rubricollis), Masked Lapwing (Vanellus miles), Ruddy Turnstone (Arenaria interpres), Great Knot (Calidris tenuirostris), Sanderling (Calidris alba), Rednecked Stint (Calidris ruficollis), Sharp-tailed Sandpiper

(Calidris acuminata), Fairy Tern (Sternula nereis), Crested Tern (Thalasseus bergii), Pacific Gull (Larus pacificus), Silver Gull (Chroicocephalus novaehollandiae), Richard's Pipit (Anthus novaeseelandiae).

MAMMALS

Australian Sea-lion (Neophoca cinerea).

REPTILES

Bight Slider (Lerista arenicola).



Sand Flats

NATURAL DISTRIBUTION

Sand flats are only found in low energy sheltered coastal areas, and may be associated with lagoon and estuarine systems.

DESCRIPTION

This habitat type is largely influenced by tidal movements that expose large areas of sediment (sand and/or mud) to the air at low tide, and are mostly covered by water in high tide. Sand spits are similar in character, but are only inundated by the largest tides or storm surges. Sand flats exhibit high biological productivity as a result of fine organic material becoming trapped in the shallow slow moving water, creating an abundance of nutrients.

Sand flats do not typically contain vegetation, although some fringing saltmarsh plant species may be present at the high tide line and stabilise the sediment. Mats of microalgae can occur in suitable conditions and may bind the sediment. Seagrass beds (e.g. *Zostera* spp.) develop in areas with slightly larger sediment particles. The exposure of sediment at low tide is utilised by many shorebirds that forage for invertebrates, molluscs and crustaceans. Molluscs attach themselves to rocks present in the sediment substrate. Small organisms such as crabs, snails and worms live intertidally on the surface of the sediment, under the surface of the sediment or in

areas of permanent water.

Sand and mud flats effectively absorb wave energy, providing protection against erosion and flooding in nearby low-lying areas. Due to the predominant characteristic of fine sediment, sand flats and mud flats may perform pollution sequestration, as pollutants, including heavy metals, are held by fine organic material.

An important feature of estuarine systems is the prevalence of well established sand spits. These provide safe high tide roosts for multiple species of shorebirds and waterbirds. Sand spits that have accumulated large areas of sand and weed are often preferred breeding sites for Fairy Tern (*Sternula nereis*), Australian Pied Oystercatcher (*Haematopus longirostris*) and Red-capped Plover (*Charadrius ruficapillus*) and in less disturbed systems provide safe haven for Whimbrel (*Numenius phaeopus*) and Eastern Curlew (*Numenius madagascariensis*).

EXTENT: 384 km of coastline

PROTECTED: 86 km of coastline (22%)











Main: Australian Shelduck landing on a sand bar Top Left: Red-necked Stint feeding on sand flat Top Right: Australian Pied Oystercatcher and Silver Gull Bottom Left: Sand flat with Caspian Tern and Pied Oystercatcher Bottom Right (left): Red-necked Avocet Bottom Right (right): Habitat distribution map

REFERENCE AREAS

Coffin Bay, Streaky Bay, Baird Bay, Venus Bay, Laura Bay, Murat Bay (Ceduna), Tourville Bay, Acraman Creek CP.

THREATS

Sea level changes may permanently inundate or expose these areas, altering the assemblage of species which it can support. Chemical pollution is also of concern as particles such as heavy metals may accumulate in the fine organic sediment of sand flats.

COMMON NATIVE PLANT SPECIES

There is generally no vegetation associated with sand flats although fringing vegetation may include samphire and saltbush communities.

BIRDS

Black Swan (Cygnus atratus), Chestnut Teal (Anas castanea), White-faced Heron (Egretta novaehollandiae), Great Egret (Ardea alba), Little Egret (Egretta garzetta), Eastern Reef Egret (Egretta sacra), Little Black Cormorant (Phalacrocorax sulcirostris), Black-faced Cormorant (Phalacrocorax fuscescens), Pied Cormorant (Phalacrocorax varius), Australian Pelican (Pelecanus conspicillatus), Nankeen Night-heron (Nycticorax caledonicus), Australian Pied Oystercatcher (Haematopus longirostris), Sooty Oystercatcher (Haematopus fuliginosus), Black-winged Stilt (Himantopus himantopus), Red-necked Avocet (Recurvirostra novaehollandiae), Banded Stilt (Cladorhynchus leucocephalus), Pacific Golden Plover (Pluvialis

fulva), Grey Plover (Pluvialis squatarola), Double-banded Plover (Charadrius bicinctus), Lesser Sand Plover (Charadrius mongolus), Greater Sand Plover (Charadrius leschenaultii), Oriental Plover (Charadrius veredus), Masked Lapwing (Vanellus miles), Banded Lapwing (Vanellus tricolor), Bar-tailed Godwit (Limosa lapponica), Whimbrel (Numenius phaeopus), Eastern Curlew (Numenius madagascariensis), Grey-tailed Tattler (Tringa brevipes), Common Greenshank (Tringa nebularia), Marsh Sandpiper (Tringa stagnatilis), Ruddy Turnstone (Arenaria interpres), Great Knot (Calidris tenuirostris), Red Knot (Calidris canutus), Red-necked Stint (Calidris ruficollis), Sharp-tailed Sandpiper (Calidris acuminata), Curlew Sandpiper (Calidris ferruginea), Whiskered Tern (Chlidonias hybrida), Fairy Tern (Sternula nereis), Crested Tern (Thalasseus bergii), Caspian Tern (Hydroprogne caspia), Pacific Gull (Larus pacificus), Silver Gull (Larus novaehollandiae), Welcome Swallow (Hirundo neoxena).

MAMMALS

None recorded.

REPTILES

None recorded.



Saltmarsh/Samphire

NATURAL DISTRIBUTION

This habitat type is found fringing sub-coastal wetlands and in intertidal regions of sheltered coasts with low wave energy. They are permanently or intermittently inundated by marine tides or lake water levels.

DESCRIPTION

This habitat is often associated with coastal wetlands, inlets, mangroves, estuaries and sand flats. It prefers soft substrate, including anoxic sandy silts and clays, with high levels of salinity due to the evaporation and drainage characteristics of coastal soils. Soil type, tidal patterns and elevation all strongly influence the species composition of flora and fauna in saltmarsh communities. Areas of bare sediment amongst vegetation are a common feature and may indicate soil with extreme levels of salinity, often showing a salt crystal bloom when dry.

Saltmarsh/samphire shrublands are mostly treeless and often consist of salt-tolerant plants including low succulent herbs, grasses, rushes and sedges. Samphire shrublands may be dominated by *Halosarcia* spp., *Sclerostegia* spp. and Sarcocornia spp., with Sarcocornia spp. occurring in regularly inundated zones and *Tecticornia* spp. in less frequently inundated zones. Slight changes in elevation often result

in significant changes in plant species.

There are a broad range of fauna species, including terrestrial and aquatic, that use saltmarsh communities for foraging, breeding and roosting. Some fauna include birds, insects, mammals as well as crabs, molluscs and fish, with different species utilising this plant community at different stages of tidal events. Fish access the saltmarsh communities during high and spring tides to consume organic films. Crab larvae and shorebirds forage in saltmarsh communities at low tide when invertebrates are exposed.

EXTENT: 8,142 hectares

PROTECTED: 3,688 hectares (45%)

CONSERVATION STATUS: This habitat is nationally listed as Vulnerable.

REFERENCE AREAS

Streaky Bay, Acraman Creek CP, Sceale Bay CP, Lake Newland CP, Tourville Bay CP, Coffin Bay NP, Venus Bay CP, Wittelbee CP.

THREATS

This habitat is threatened by sea level rise which could permanently inundate low lying areas. Samphire areas are often perceived as











Main: Samphire shrubland around Seagull Lake Top Left: Inundated samphire shrubland Top Right: White-fronted Chat (*Epthianura albifrons*) Bottom Left: Rock Parrot (*Neophema petrophila*) Bottom Right (left): Masked Lapwing (*Vanellus miles*) Bottom Right (right): Habitat distribution map

wasteland and can be subject to high levels of dumping and off road vehicle disturbance. Pest animals such as foxes and cats prey on native animals. Overgrazing by domestic stock and rabbits can alter species composition and structure and reduce the habitat value of some areas. Generally high levels of salinity make this habitat resistant to many weed species however some salt tolerant grasses and herbs do compete with native vegetation in slightly elevated areas.

COMMON NATIVE PLANT SPECIES

Upperstorey Species: Swamp Paper-bark (*Melaleuca halmaturorum*) Midstorey Species: Lignum (*Duma florulenta*), Common Boobialla (*Myoporum insulare*), Nitre-bush (*Nitraria billardierei*).

Understorey Species: Samphire (Halosarcia spp., Sclerostegia spp., Sarcocornia spp. and Tecticornia spp.), Grasses including Speargrass (Austrostipa spp.) and Emu-grass (Distichlis distichophylla), Ground covers including Climbing Saltbush (Einadia nutans), Ruby Saltbush (Enchylaena tomentosa), Southern Sea-Heath (Frankenia pauciflora), Native Pigface (Carpobrotus rossii) and Bluebush (Maireana spp.).

Refer to page 22 in Native Vegetation of the Eyre Peninsula, South Australia (Greening Australia).

BIRDS

Grey Teal (Anas gracilis), Chestnut Teal (Anas castanea), Great Egret (Ardea alba), Swamp Harrier (Circus approximans), Blackwinged Stilt (Himantopus himantopus), Red-necked Avocet (Recurvirostra novaehollandiae), Banded Stilt (Cladorhynchus leucocephalus), Red-capped Plover (Charadrius ruficapillus), Masked Lapwing (Vanellus miles), Banded Lapwing (Vanellus tricolor), Common Greenshank (Tringa nebularia), Red-necked Stint (Calidris ruficollis), Sharp-tailed Sandpiper (Calidris acuminata), Rock Parrot (Neophema petrophila), Whitefronted Chat (Epthianura albifrons), Richard's Pipit (Anthus novaeseelandiae).

MAMMALS

Southern Freetail-bat (*Mormopterus* sp.), White-striped Freetail-bat (*Tadarida australis*), Lesser Long-eared Bat (*Nyctophilus geoffroyi*), Gould's Wattled Bat (*Chalinolobus gouldii*), **Chocolate Wattled Bat** (*Chalinolobus morio*), Southern Forest Bat (*Vespadelus regulus*).

REPTILES

Eastern Tiger Snake (Notechis scutatus).



Subcoastal Lakes

NATURAL DISTRIBUTION

Found in the subcoastal zone, behind the barrier sand dunes.

DESCRIPTION

A number of deep permanent lakes and many ephemeral lakes occur along the western Eyre Peninsula coastline including Lake Hamilton and Lake Newland. The hydrology of the lakes is often complex, with influence from surface water runoff, seawater intrusion and freshwater springs and as a result they have variable salinity levels, ranging from brackish to highly saline within and between lakes. Differing water depths and salinity support differing assemblages of algae, plants and invertebrates which in turn supports a wide variety of vertebrate species.

Subcoastal lakes are utilised as a refuge by many species of birds, including resident and migratory shorebirds, especially when weather conditions on the coast become too intense for foraging.

Although lake beds are generally unvegetated, they are usually covered by microbial mats, comprised mostly of salt tolerant cyanobacteria (blue-green algae) and diatoms, unicellular and filamentous green algae and bacteria. These organisms are the basis of the lakes' food chains.

The fringing vegetation of subcoastal lakes is largely dominated by samphire. Swamp Paper-barks (*Melaleuca halmaturorum*) also occur on lake margins and are often adjacent to *Gahnia* spp. sedgelands. Stands of freshwater sedges, including *Juncus krausii* and *Cyperus* spp., may also occur where freshwater springs enter the lakes.

EXTENT: 36,372 hectares

PROTECTED: 8,752 hectares (24%)

REFERENCE AREAS

Lake Hamilton, Seagull Lake, Lake Greenly, Lake Malata, Lake MacDonnell, Sheringa Lagoon, Lake Newland CP.

THREATS

The primary threat to the subcoastal lakes are changes to hydrology. These may occur naturally or be driven by human intervention such as mining or water extraction. Pest species such as foxes and cats may threaten animals on the lakes or in the fringing vegetation. Grazing can also threaten unprotected areas by reducing plant diversity and structure. Disturbance to the microbial mats, by recreational vehicles or grazing, can have detrimental flow-on impacts throughout the food chain.











Main: Lake Newland Three Springs Top Left: Banded Stilt flying over Lake Hamilton Top Right: Curlew Sandpiper, Sharp-tailed Sandpiper and Red-necked Stint Bottom Left: Australian Pelicans and Banded Stilt at Seagull Lake Bottom Right (left): White-faced Heron Bottom Right (right): Habitat distribution map

COMMON NATIVE PLANT SPECIES

The lake beds themselves are generally unvegetated. The species listed below are generally found on the lake fringes.

Upperstorey Species: Swamp Paper-bark (*Melaleuca halmaturorum*).

Midstorey Species: Short-leaf Honey-myrtle (*Melaleuca brevifolia*), Saw-sedge (*Gahnia* spp.).

Understorey Species: Samphire (Sarcocornia spp and Sclerostegia spp.), Aquatic plants including Flat-sedge (Cyperus spp.), Knobby Club-rush (Ficinia nodosa), Rush (Juncus spp.), Long-fruit Watermat (Lepilaena cylindrocarpa), Widgeon Grass (Ruppia polycarpa), and Ground covers Native Pigface (Carpobrotus rossii), Southern Sea-heath (Frankenia paucifolia), Dryland Tea-tree (Melaleuca lanceolata).

BIRDS

Musk Duck (Biziura lobata), Black Swan (Cygnus atratus), Australian Shelduck (Tadorna tadornoides), Australian Wood Duck (Chenonetta jubata), Pink-eared Duck (Malacorhynchus membranaceus), Grey Teal (Anas gracilis), Chestnut Teal (Anas castanea), Pacific Black Duck (Anas superciliosa), Hardhead (Aythya australis), Australasian Grebe (Tachybaptus novaehollandiae), Hoary-headed Grebe (Poliocephalus poliocephalus), Great Crested Grebe (Podiceps cristatus), Australasian Darter (Anhinga novaehollandiae), Little Pied Cormorant (Microcarbo melanoleucos), Little Black Cormorant (Phalacrocorax sulcirostris), Pied Cormorant (Phalacrocorax varius), Australian Pelican (Pelecanus conspicillatus), White-

faced Heron (Egretta novaehollandiae), Great Egret (Ardea alba), Little Egret (Egretta garzetta), Glossy Ibis (Plegadis falcinellus), Eastern Osprey (Pandion cristatus), White-bellied Sea-eagle (Haliaeetus leucogaster), Swamp Harrier (Circus approximans), Purple Swamphen (Porphyrio porphyrio), Buffbanded Rail (Gallirallus philippensis), Australasian Spottedcrake (Porzana fluminea), Black-tailed Native Hen (Tribonyx ventralis), Dusky Moorhen (Gallinula tenebrosa), Eurasian Coot (Fulica atra), Black-winged Stilt (Himantopus himantopus), Red-necked Avocet (Recurvirostra novaehollandiae), Banded Stilt (Cladorhynchus leucocephalus), Banded Lapwing (Vanellus tricolor), Oriental Plover (Charadrius veredus), Marsh Sandpiper (Tringa stagnatilis), Sharp-tailed Sandpiper (Calidris acuminata), Curlew Sandpiper (Calidris ferruginea), Whiskered Tern (Chlidonias hybrida), Fairy Tern (Sternula nereis), Silver Gull (Chroicocephalus novaehollandiae), Sacred Kingfisher (Todiramphus sanctus).

MAMMALS

Southern Freetail-bat (*Mormopterus* sp.), White-striped Freetail-bat (*Tadarida australis*), Lesser Long-eared Bat (*Nyctophilus geoffroyi*), Gould's Wattled Bat (*Chalinolobus gouldii*), **Chocolate Wattled Bat** (*Chalinolobus morio*), Southern Forest Bat (*Vespadelus regulus*).

REPTILES

None recorded.



Mangroves

NATURAL DISTRIBUTION

Sheltered coastal estuaries and tidal flats, subject to twice daily tidal inundation.

DESCRIPTION

This habitat type is associated with the intertidal zone and, due to its sensitivity to wave action, is only found in sheltered coastal bays or behind the protection of coastal barriers such as reefs and islands. On the western Eyre Peninsula deep tidal channels wind their way through extensive mangrove forests. These areas represent some of the largest temperate mangrove communities in Australia and are one of the State's most important wetland ecosystems. The overstorey is dominated by closely spaced Grey Mangrove (Avicennia marina ssp. marina). Due to the high salinity and poor aeration of coastal muds mangrove trees possess a number of special adaptations to survive, including the 'air-breathing' roots (pneumatophores) that are visible during low tide. Little vegetation grows below these trees with the exception of some samphire species.

Although plant species diversity is low, faunal species diversity is very high. These areas are vital nursery, feeding and breeding areas for fish and crustacean species, which in turn attract a diverse

range of birds which feed in deep water, shallow water and low tide mud and sand flats. The dense vegetation also provides excellent roosting and nesting sites for a range of bird species.

EXTENT: 2,048 hectares

PROTECTED: 204 hectares (10%)

REFERENCE AREAS

Acraman Creek, Venus Bay, Tourville Bay, Ceduna, Laura Bay, Smoky Bay, Streaky Bay, Baird Bay, Eyre Island, St. Peter Island.

THREATS

These areas are commonly threatened by industrial, residential and recreational pressures. Furthermore, sea level rise threatens mangrove communities unable to colonise adjacent inland areas. Weed invasion is uncommon due to the high salinity and poor aeration of coastal muds.











Main: Mangrove Forest Top Left: Mangrove Forest with tidal creek Top Right: Hoary-headed Grebe (Poliocephalus poliocephalus) Bottom Left: Little Pied Cormorant (Microcarbo melanoleucos) Bottom Right (left): Mangroves and tidal mud flats Bottom Right (right): Habitat distribution map

COMMON NATIVE PLANT SPECIES

Upperstorey Species: Grey Mangrove (*Avicennia marina* spp. *marina*).

Understorey Species: Samphire (e.g. *Halosarcia* spp., *Sueda* spp., *Sarcocornia* spp.).

Refer to page 8 in Native Vegetation of the Eyre Peninsula, South Australia (Greening Australia).

BIRDS

Musk Duck (Biziura lobata), Black Swan (Cygnus atratus), Pink-eared Duck (Malacorhynchus membranaceus), Grey Teal (Anas gracilis), Chestnut Teal (Anas castanea), Pacific Black Duck (Anas superciliosa), Hoary-headed Grebe (Poliocephalus poliocephalus), Crested Pigeon (Ocyphaps lophotes), Little Pied Cormorant (Phalacrocorax varius), Great Cormorant (Phalacrocorax carbo), Little Black Cormorant (Phalacrocorax sulcirostris), Pied Cormorant (Phalacrocorax varius), Blackfaced Cormorant (Phalacrocorax fuscescens), Australian Pelican (Pelecanus conspicillatus), White-faced Heron (Egretta novaehollandiae), Great Egret (Ardea alba), Little Egret (Egretta garzetta), Eastern Reef Egret (Egretta sacra), Nankeen Night-heron (Nycticorax caledonicus), Eastern Osprey (Pandion cristatus), Nankeen Kestrel (Falco cenchroides), White-bellied Seaeagle (Haliaeetus leucogaster), Australian Pied Oystercatcher (Haematopus longirostris), Red-necked Avocet (Recurvirostra novaehollandiae), Red-capped Plover (Charadrius ruficapillus), Masked Lapwing (Vanellus miles), Bar-tailed Godwit (Limosa lapponica), Whimbrel (Numenius phaeopus), Grey-tailed Tattler

(Tringa brevipes), Common Greenshank (Tringa nebularia), Sharp-tailed Sandpiper (Calidris acuminata), Curlew Sandpiper (Calidris ferruginea), Caspian Tern (Hydroprogne caspia), Whiskered Tern (Chlidonias hybrida), Silver Gull (Chroicocephalus novaehollandiae), Rock Parrot (Neophema petrophila), Sacred Kingfisher (Todiramphus sanctus), Bluebreasted Fairy-wren (Malurus pulcherrimus), Variegated Fairywren (Malurus lamberti), Singing Honeyeater (Lichenostomus (Acanthagenys virescens), Spiny-cheeked Honeyeater rufogularis), Red Wattlebird (Anthochaera carunculata), Whitefronted Chat (*Epthianura albifrons*), Grey Shrike-thrush (Colluricincla harmonica), Grey Butcherbird (Cracticus torquatus), Willie Wagtail (Rhipidura leucophrys), Australian Magpie (Cracticus tibicen), Australian Raven (Corvus coronoides), Magpie-lark (Grallina cyanoleuca), Welcome Swallow (Hirundo neoxena).

MAMMALS

Bottlenose Dolphin (*Tursiops truncatus*), Southern Freetail-bat (*Mormopterus* sp.), White-striped Freetail-bat (*Tadarida australis*), Lesser Long-eared Bat (*Nyctophilus geoffroyi*), Gould's Wattled Bat (*Chalinolobus gouldii*), **Chocolate Wattled Bat** (*Chalinolobus morio*), Southern Forest Bat (*Vespadelus regulus*).

REPTILES

None recorded.



Rocky Coasts

NATURAL DISTRIBUTION

This habitat type is associated with exposed areas of coast with high wave energy and strong winds, although it may also occur in more sheltered areas. Rocky coasts may occur at the base of coastal cliffs as platforms, as headlands may interrupt sandy beaches and sand flats and may be partially submerged nearshore rocky reefs.

DESCRIPTION

Rocky coasts consist of solid rocks in the form of expanses of flat rock with eroded depressions and outcrops of boulders and smaller rocks. This community is resistant to erosion and creates stabilisation of inshore sediment. This community is heavily influenced by tidal movements, where low tide creates isolated pools of water which are renewed in high tide. Rock pools in higher areas that are only intermittently influenced by tidal flow, often contain brackish or fresh water.

This habitat type is biologically rich with organisms adapted to daily fluctuations in temperature, water levels and salinity. Algae and gastropods are particularly diverse and abundant in rocky coastal communities. Rock pools contain a variety of specialised fauna including macroinvertebrates such as marine worms, insect larvae and amphipods and larger fauna including mussels, sea urchins,

starfish and anemones. Different fauna are found in high and low pools, a trend known as vertical zonation of taxa. Wading shorebirds forage for food, including exposed mussels and gastropods, in rock pools at low tide. Rock pools are also an important nursery area for fish and crustaceans. Rocky coasts are a common habitat for Pinnipeds (Seals and Sea-lions) which use the areas as haul-outs and for raising pups.

EXTENT: 153 km of coastline **PROTECTED:** 25 km (16%)

REFERENCE AREAS

Venus Bay, Point Fowler, Point Dillon, Point Brown, Point Drummond, Smooth Pool (Point Westall), Slade Point, Coles Point, Rincon Beach, Mt. Camel Beach, Talia, Corvisart Bay, Point Labatt CP.

THREATS

These areas are commonly threatened by residential and recreational pressures. Sea level rise may permanently submerge large areas of rocky coast.











Main: Rocky headland and small cove Top Left: Sooty Oystercatcher (Haematopus fuliginosus) Top Right: Australian Sea-lion (Neophoca cinerea)

Bottom Left: Pacific Gull (Larus pacificus) Bottom Right (left): Common Sandpiper (Actites hypoleucos) Bottom Right (right): Habitat distribution map

COMMON NATIVE PLANT SPECIES

No plant species occur in rocky coasts. Seaweed including green, brown and red algae species (Chlorophyta, Phaeophyta and Rhodophyta respectively) occur in the intertidal parts of rocky coasts.

BIRDS

Little Penguin (Eudyptula minor), Great Cormorant (Phalacrocorax carbo), Pied Cormorant (Phalacrocorax varius), Black-faced Cormorant (Phalacrocorax fuscescens), Eastern Osprey (Pandion cristatus), White-bellied Sea-eagle (Haliaeetus leucogaster), Australian Pied Oystercatcher (Haematopus longirostris), Sooty Oystercatcher (Haematopus fuliginosus), Whimbrel (Numenius phaeopus), Common Sandpiper (Actitis hypoleucos), Ruddy Turnstone (Arenaria interpres), Greytailed Tattler (Tringa brevipes), Common Greenshank (Tringa nebularia), Caspian Tern (Hydroprogne caspia), Crested Tern (Thalasseus bergii), Pacific Gull (Larus pacificus), Silver Gull (Chroicocephalus novaehollandiae), Rock Parrot (Neophema petrophila).

MAMMALS

Australian Sea-lion (*Neophoca cinerea*), New Zealand Fur-seal (*Arctocephalus forsteri*), Australian Fur-seal (*Arctocephalus pusillus*).

REPTILES

None recorded.



Coastal Cliffs and Cliff Tops

NATURAL DISTRIBUTION

Cliffs are found along much of the west coast of the Eyre Peninsula.

DESCRIPTION

This habitat type is associated with exposed coastline featuring high wave-energy and strong winds. Cliff faces are eroded and shaped by waves and wind, creating ledges and alcoves. The characteristics of coastal cliffs and cliff tops may vary depending on the type of rock present. Cliff substrate in the Eyre Peninsula mainly consists of limestone and calcarenite. Rocky cliff edges and headlands border sandy beaches along the coastline and are situated above the tide line but may be influenced by strong wave action.

Plant species may occur on ledges and alcoves on cliff faces, but are more commonly found on cliff tops. These plant species are adapted to tolerate exposure to salty spray and strong winds. The plant species composition and structure is dominated by low shrubs, generally less than one metre high.

Importantly, this habitat type is often inaccessible to a range of threats which makes them very important for many threatened species such as the Eastern Osprey (*Pandion cristatus*) and Whitebellied Sea-eagle (*Haliaeetus leucogaster*), and a range of more common species, where they provide refugia in otherwise hostile conditions. Coastal cliffs also provide vantage points for birds of prey from which to hunt. Bats such as the Chocolate Wattled Bat (*Chalinolobus morio*) roost in caves along the cliff face. The abundant rock of cliff tops support a variety of lizard and snake species.

EXTENT: 9,921 hectares, 493 km of coastline **PROTECTED:** 5,286 hectares (53%), 79 km (16%)

REFERENCE AREAS

Elliston, Kiana, Sheringa, Talia, Mt. Camel Beach, Point Drummond, Corvisart Bay, Calca Peninsula, Cape Blanche CP, Coffin Bay NP, Lincoln NP, Venus Bay CP, Wittelbee CP.

THREATS

This habitat is threatened by high levels of recreational and residential impacts. Eastern Osprey and White-bellied Sea-eagles are particularly sensitive to disturbance during their nesting season. Other impacts include weed invasion, overgrazing by stock and rabbits and feral animals including cats, foxes and feral pigeons.











Main: Coastal Cliff Low Shrubland Top Left: Coastal Cliff Spinifex Grassland Top Right: Eastern Osprey (*Pandion cristatus*) on nest Bottom Left: South Coast Gecko (*Diplodactylus calcicolus*) Bottom Right (left): Chocolate Wattled Bat (*Chalinolobus morio*) in flight Bottom Right (right): Habitat distribution map

COMMON NATIVE PLANT SPECIES

Upperstorey Species: Drooping Sheoak (*Allocasuarina verticillata*), Eucalyptus spp. (*E. diversifolia, E. porosa, E. rugosa, E. yalatensis*). Midstorey Species: Wattles (*Acacia spp., A. anceps, A. cupularis, A. ligulata, A. longifolia ssp. sophorae, A. nematophylla*), Coast Beardheath (*Leucopogon parviflorus*), Common Boobialla (*Myoporum insulare*).

Understorey Species: Prickly Ground-berry (*Acrotriche patula*), Coast Velvet-bush (*Lasiopetalum discolor*), Coast Cushion-bush (*Leucophyta brownii*), Salt Bluebush (*Maireana oppositifolia*), Spinifex (*Triodia compacta*).

Refer to page 12 in Native Vegetation of the Eyre Peninsula, South Australia (Greening Australia).

BIRDS

Eastern Osprey (Pandion cristatus), White-bellied Sea-eagle (Haliaeetus leucogaster), Peregrine Falcon (Falco peregrinus), Nankeen Kestrel (Falco cenchroides), Rock Parrot (Neophema petrophila), Singing Honeyeater (Lichenostomus virescens), Tawny-crowned Honeyeater (Gliciphila melanops), New Holland Honeyeater (Phylidonyris novaehollandiae), Rufous Fieldwren (Calamanthus campestris), Fairy Martin (Hirundo ariel), Richard's Pipit (Anthus novaeseelandiae).

MAMMALS

Western Pygmy-possum (*Cercartetus concinnus*), Mitchell's Hopping-mouse (*Notomys mitchellii*), Southern Freetail-bat (*Mormopterus* sp.), White-striped Freetail-bat (*Tadarida australis*),

Lesser Long-eared Bat (*Nyctophilus geoffroyi*), Gould's Wattled Bat (*Chalinolobus gouldii*), **Chocolate Wattled Bat** (*Chalinolobus morio*), Southern Forest Bat (*Vespadelus regulus*).

REPTILES

Prickly Dragon (*Ctenotus chapmani*), Peninsula Dragon (*Ctenotus fionni*), Eastern Bearded Dragon (*Pogona barbata*), Peninsula Brown Snake (*Pseudonaja inframacula*), **South Coast Gecko (***Diplodactylus calcicolus*), Marbled Gecko (*Christinus marmoratus*), Southern Four-toed Slider (*Lerista dorsalis*), Common Dwarf Skink (*Menetia greyii*), Mallee Snake-eye (*Morethia obscura*), Sleepy Lizard (*Tiliqua rugosa*), Five-lined Earless Dragon (*Tympanocryptis lineata*).



Offshore Islands

NATURAL DISTRIBUTION

Approximately 70 offshore islands occur off the western Eyre Peninsula coastline. These occur as individual islands or as island groups. The most distant island is Dorothee Island, approximately 68 km from the mainland.

DESCRIPTION

Offshore islands differ in size and features, however generally consist of granite boulders and limestone (calcarenite) domes, cliffs and caves. These offshore islands can also contain small sandy bays, large sand dunes and intertidal rock pools, and may be surrounded by underwater and exposed tidal reef platforms. Some islands such as Eyre Island and Little Eyre Island are composed only of sand.

Whilst many smaller rocky islands contain no vegetation, some of the larger islands, such as St. Peter Island and the Waldegrave Islands, contain a variety of plant species. Some of the plant communities that exist on these offshore islands include mangroves, mallee woodland, grasslands, saltmarsh and chenopod shrublands.

Due to the isolated nature of offshore islands, they can act as refugia for biodiversity, including many threatened and endemic plant and animal species. Several mammal species have been released onto some islands as part of threatened species recovery programs.

The species composition of animals is unique to each island. Birds, mammals and reptiles are all present on some islands, while other smaller islands may only support birds. Offshore islands provide important breeding grounds for a number of mammal and bird species. The Cape Barren Goose (Cereopsis novaehollandiae), Little Penguin (Eudyptula minor), Short-tailed Shearwater (Ardenna tenuirostris), White-bellied Sea-eagle (Haliaeetus leucogaster) and Eastern Osprey (Pandion cristatus) all breed predominately on offshore islands. Sand islands support significant populations of breeding birds including Oystercatcher (Haematopus spp.), Pacific Gull (Larus pacificus), Tern (Hydroprogne caspia, Sternula nereis), Red-capped Plover (Charadrius ruficapillus) and Buff-banded Rail (Gallirallus philippensis). The Australian Sea-lion (Neophoca cinerea) and New Zealand Fur-seal (Arctocephalus forsteri) use offshore islands as breeding grounds and haul-out sites.

EXTENT: 70 islands, 11,473 hectares

PROTECTED: 18 islands (26%), 6,298 hectares (55%)

REFERENCE AREAS

The greatest concentration of offshore islands is west of Ceduna.











Main: Aerial view of East Island (Waldegrave Island CP) Top Left: Bird nests on the ground at East Island Top Right: White-bellied Sea-eagle (Haliaeetus leucogaster) Bottom Left: Australian Sea-lion (Neophoca cinerea) Bottom Right (left): Eastern Tiger Snake (Notechis scutatus) Bottom Right(right): Habitat distribution map

THREATS

Weed invasion, predominately African Boxthorn (*Lycium ferocissimum*) is a significant problem. Feral animals such as foxes, rabbits, cats and rats also pose threats to vegetation and resident animals. Sea level rise may eliminate entire islands, potentially changing them into shallow reefs.

COMMON NATIVE PLANT SPECIES

Offshore islands do not have a characteristic vegetation assemblage but are made up of many vegetation types depending on their geology and management history.

BIRDS

Cape Barren Goose (Cereopsis novaehollandiae), Chestnut Teal (Anas castanea), Short-tailed Shearwater (Ardenna tenuirostris), Little Penguin (Eudyptula minor), Australasian Gannet (Morus serrator), Pied Cormorant (Phalacrocorax varius), Black-faced Cormorant (Phalacrocorax fuscescens), Australian Pelican (Pelecanus conspicillatus), White-faced Heron (Egretta novaehollandiae), Eastern Reef Egret (Egretta sacra), Eastern Osprey (Pandion cristatus), White-bellied Sea-eagle (Haliaeetus leucogaster), Swamp Harrier (Circus approximans), Buff-banded Rail (Gallirallus philippensis), Australian Pied Oystercatcher (Haematopus longirostris), Sooty Oystercatcher (Haematopus fuliginosus), Pacific Golden Plover (Pluvialis fulva), Grey Plover (Pluvialis squatarola), Red-capped Plover (Charadrius ruficapillus), Hooded Plover (Thinornis rubricollis), Masked Lapwing (Vanellus miles), Common Greenshank (Tringa

nebularia), Ruddy Turnstone (Arenaria interpres), Great Knot (Calidris tenuirostris), Red-necked Stint (Calidris ruficollis), Fairy Tern (Sternula nereis), Caspian Tern (Hydroprogne caspia), Crested Tern (Thalasseus bergii), Pacific Gull (Larus pacificus), Silver Gull (Chroicocephalus novaehollandiae), Rock Parrot (Neophema petrophila), Sacred Kingfisher (Todiramphus sanctus).

MAMMALS

Australian Sea-lion (*Neophoca cinerea*), New Zealand Fur-seal (*Arctocephalus forsteri*), Australian Fur-seal (*Arctocephalus pusillus*), Bush Rat (*Rattus fuscipes*), Brush-tailed Bettong (*Bettongia penicillata*), Greater Stick-nest Rat (*Leporillus conditor*), Southern Brown Bandicoot (*Isoodon obesulus*), Tammar Wallaby (*Macropus eugenii*), Black-footed Rock-wallaby (*Petrogale lateralis pearsoni*), Lesser Long-eared Bat (*Nyctophilus geoffroyi*).

REPTILES

Common Death Adder (Acanthophis antarcticus), Masters' Snake (Drysdalia mastersii), Eastern Tiger Snake (Notechis scutatus), Barking Gecko (Underwoodisaurus milii), Common Scaly-foot (Pygopus lepidopodus), Peninsula Dragon (Ctenophorus fionni), Painted Dragon (Ctenophorus pictus), Striped Wall Skink (Cryptoblepharus pulcher), Spinifex Slender Blue-tongue (Cyclodomorphus melanops), Western Tree Skink (Egernia richardi), Four-toed Earless Skink (Hemiergis peronii), Southern Four-toed Slider (Lerista dorsalis), Mallee Snake-eye (Morethia obscura), Sleepy Lizard (Tiliqua rugosa).