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# Marine Parks

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## Environmental, Economic and Social Values of the Nuyts Archipelago Marine Park

### PART 1



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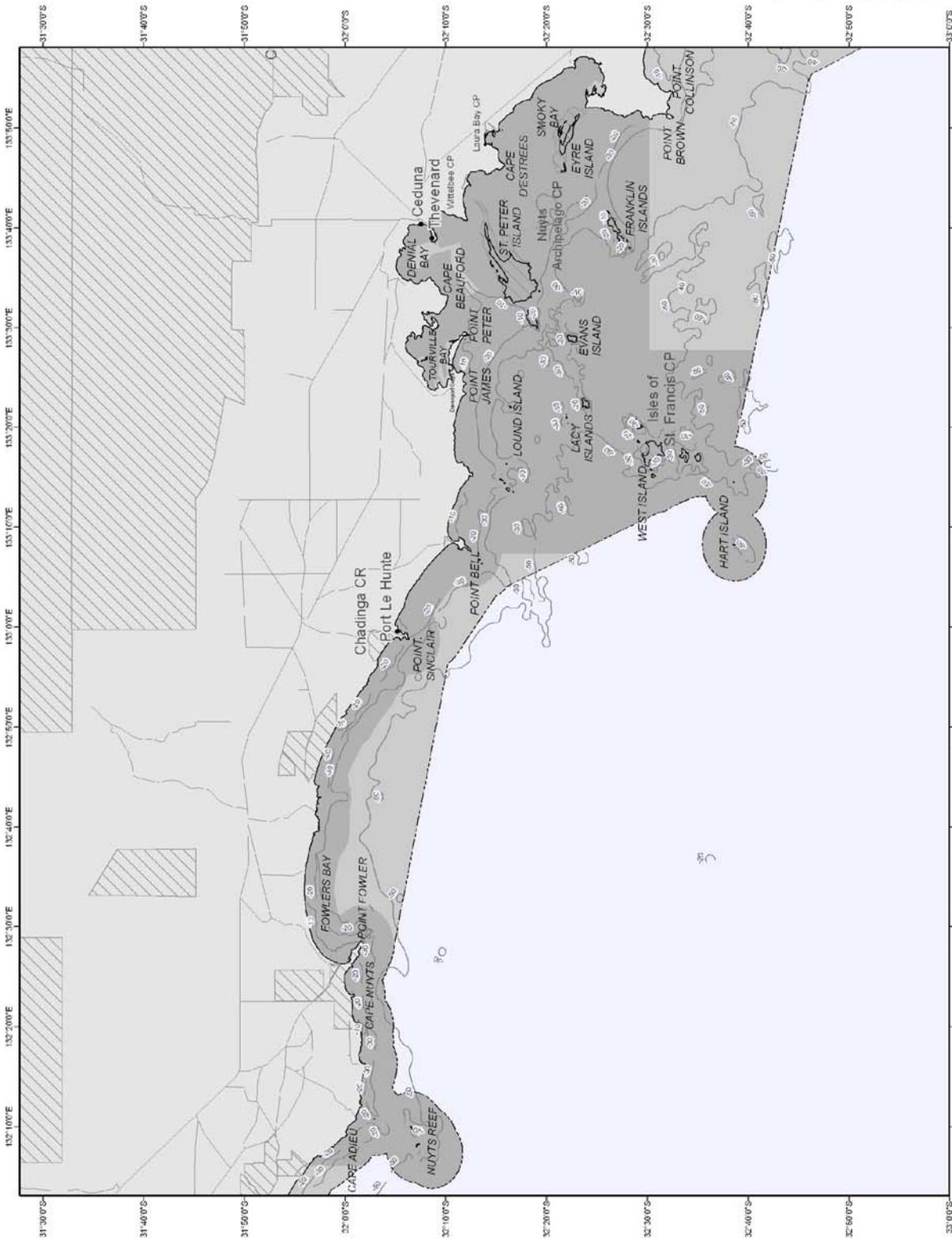
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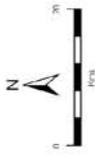
## PART 2 AN ATLAS OF MAPS

An atlas of maps containing environmental, economic and social/cultural information for this marine park has been produced as Part 2 of the Values Statement. The maps provide details specific to this park in a user-friendly visual format and may be viewed and downloaded from <http://www.marineparks.sa.gov.au>.

# Nuyts Archipelago Marine Park



- Marine Park
- State Waters Jurisdiction
- Parks and Reserves
- Bathymetry Contours
- Roads
- Coastline (median high water)



**Produced by**  
Coast and Marine Conservation  
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Marine Biologians - SARCI  
Geographic Information - Geoscience Australia  
1 February 2015

**Compiled**  
Projection  
Datum

Geographic Datum of Australia, 1984  
SARCI Data for Bathymetry and Topography 2008  
Topographic Data for the Nuyts Archipelago (for  
the purpose of preparing the map) was compiled by SARCI  
in 2008. The map was prepared by SARCI in 2015.  
The map was prepared by SARCI in 2015.  
The map was prepared by SARCI in 2015.



## Nuyts Archipelago Marine Park

At nearly 4,000 km<sup>2</sup>, the Nuyts Archipelago Marine Park is the largest single marine park in South Australia's marine parks network. It is located on the west coast of South Australia in the Murat Bioregion and includes the Nuyts Reef complex, Fowlers Bay, islands of the Nuyts Archipelago and adjacent coastal bays. This marine park overlays parts or all of a number of other protected areas including Fowlers Bay Conservation Park, Isles of St Francis Conservation Park, Sinclair Islands Conservation Park, Nuyts Archipelago Conservation Park, Nuyts Reef Conservation Park, Wittlebee Conservation Park, Laura Bay Conservation Park, Chadinga Conservation Reserve and Point Bell Conservation Park.

In 2009 part of the marine park was assessed for increased protection under the *Wilderness Protection Act 1992*. In 2010 the Minister for Environment and Conservation approved the creation of the Nuyts Archipelago Wilderness Protection Area. The area to be proclaimed as the Nuyts Archipelago Wilderness Protection Area comprises the land, to the low water mark, of Purdie Islands, Lounds Island, Lacy Islands, Evans Island, Goat Island, East and West Franklin Islands, Egg Island, Smooth Island, Freeling Island, Dog Island, West Island, St Francis Island, Masillon Island, Fenelon Island, Lilliput Island, Blefuscu Island, and Hart Island. Wilderness protection for these islands will provide an opportunity to create better links between land and sea conservation areas.

# 1 ENVIRONMENTAL VALUES

## 1.1 Ecosystem services

Ecosystems provide many critically important services that people benefit from, often at no direct cost to us. Examples of ecosystem services provided by coastal and marine habitats are shown in the following table. It is important to ensure that ecosystem health and integrity are maintained so that ecosystems continue to provide these services to us all.

Table adapted from McLeod, K and Leslie, H (2009).

	Life supporting services				Resources and products				Maintain earth's living space						Recreational and cultural services					
	Biogeochemical processes	Biophysical processes	Biodiversity	Nutrient cycling	Food	Fibre, fuel, shells etc	Non-biological materials (eg minerals)	Pharmaceuticals & nutraceuticals	Climate regulation	Waste processing	Flood/storm protection	Water flow/circulation	Erosion control	Water quality	Sediment quality	Cultural and amenity	Recreation and tourism	Aesthetics	Spiritual, religious, lifestyle	Education and research
Coastal, estuarine and marine habitat types																				
Bare Sand	x	x	x	x	x	x	x			x		x		x	x	x	x	x	x	x
Seagrass	x	x	x	x	x	x		x	x	x		x	x	x	x	x	x	x	x	x
Reef (granite, limestone, calcarenite or low profile platform reef)	x	x	x	x	x	x	x	x	x	x		x	x	x		x	x	x	x	x
Cliffs	x	x	x	x	x	x	x				x					x	x	x	x	x
Sandy beaches (dunes, coarse sand, fine sand)	x	x	x	x	x	x	x			x		x	x		x	x	x	x	x	x
Saltmarsh	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Mangrove	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Water column	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x
Bedrock platform	x	x	x	x	x	x	x	x	x	x			x			x	x	x	x	x

The Nuyts Archipelago Marine Park will be designed to conserve examples of the variety of habitats and species found in the Murat Bioregion. Habitats, species and natural processes found here are summarised below.

## 1.2 Physical influences

Physical influences shape the type of habitats and species found in an area. Physical influences typical of this region include:

- sea surface temperatures ranging from 18–23°C in the summer and 12–16°C in the winter;
- shallow, inshore coastal embayments, as well as depths reaching over 50m in some places;
- the warmer Leeuwin Current<sup>1</sup>;
- the cooler Flinders Current<sup>2</sup>.

Oceanographic processes in the Nuyts Archipelago Marine Park are often affected by frequent gales and heavy seas. Coastal processes are dominated by swells from the southwest throughout the year.

The energy of breaking waves varies considerably throughout the park. High energy waves shape exposed cliffs, beaches, dunes, offshore islands such as the St Francis Isles, and headlands. Moderate wave energy characterises semi-protected points such as Point Peter and Point James and low wave energy is found in protected embayments such as Smoky and Tourville Bays.

## 1.3 Habitat variety

**Table 1** Benthic (subtidal) Habitats found in the Nuyts Archipelago Marine Park

Benthic Habitat*	Area (km <sup>2</sup> )*	% of park
Bare sand	238	6%
Dense seagrass	146	4%
Dense seagrass patches	5	<1%
Medium seagrass	193	5%
Sparse seagrass	11	<1%
Granite reef	2	<1%
Heavy limestone reef	95	2%
Low profile platform reef	161	4%
Unmapped	3083	78%

\* habitat areas have been rounded to the nearest whole number

\*\*habitats included are those found from mapping at a resolution of 1:100,000

**Table 2** Shoreline (intertidal) Habitats found in the Nuyts Archipelago Marine Park

Shoreline Habitat	Length in park (km)*	% of park length
Bedrock platform	38	8%
Cliffs	100	20%
Coarse sandy beach	96	19%
Fine sandy beach	98	19%
Mangrove	143	28%
Sand dunes	6	1%
Saltmarsh	24	5%

\* habitat lengths have been rounded to the nearest whole number

Nuyts Archipelago Marine Park contains a complex, interconnected network of highly varied habitats, such as islands, shallow bays and estuaries of varying type and orientation, resulting in a high diversity of species and productivity.

<sup>1</sup> The Leeuwin Current originates in the tropical Indian Ocean, flows south along the Western Australian coast, and turns east along the shelf break to the Great Australian Bight, bringing warm, relatively low nutrient waters (Middleton & Bye 2007).

<sup>2</sup> The Flinders Current is a deep south-east to west current which is thought to flow from the west Tasmanian shelf to Cape Leeuwin and increases in flow speed from south-east (5cm / second) to west (20cm / second). (Middleton & Bye 2007)

Nuyts Archipelago Marine Park has some of the most significant expanses of seagrasses outside South Australia's gulfs including dense seagrass beds in Fowlers Bay, shallow seagrasses on the margins of Smoky and Tourville Bays, deepwater seagrasses in offshore Denial Bay, and other seagrass beds near the Franklin Islands. The mangroves at Tourville Bay represent the western-most extent of mangroves in SA and the largest stand of mangrove forest on the Eyre Peninsula. They also form the most expansive mangrove stand between Spencer Gulf and Exmouth Gulf in north west WA.

This marine park includes the offshore Nuyts Reef complex and also contains a large area of reef leading out to Sinclair Island and off Point Bell, high energy coastal cliffs in Smoky Bay and long stretches of high energy sandy beach habitats. High energy wave and swell conditions and deep waters are found around the exposed coasts of the offshore islands, while the more sheltered lee side provides further habitat variety and complexity.

### *1.3.1 Bays of the park*

This marine park includes a variety of bays each with distinctive features, such as Scott, Fowlers, Smoky, Tourville, Denial, Murat, Bosanquet and Decres Bays.

At the western end, Fowlers Bay is a sheltered moderate energy bay with platform reef surrounding sandy bottom and a large seagrass meadow. From Nuyts Reef to Fowlers Bay and Point Bell are long stretches of sandy beach and low platform and heavy limestone reef.

Tourville Bay is a shallow, warm water, low energy system because it is protected from waves and swells by the islands of Nuyts Archipelago, subtidal reefs and sand barriers closer to shore, making it ideal for the growth of grey mangrove forests. The largest stand of mangroves in the region can be found within Tourville Bay at the western, northern and eastern shores, particularly along Davenport Creek. Davenport Creek is listed as a wetland of national importance.

Smoky Bay is a relatively large, shallow bay, with sandy seafloor found in much of the northern end. Samphire, mangroves, numerous tidal creeks and dense beds of seagrass are situated in and around the southern end of the bay.

### *1.3.2 Nuyts Archipelago*

The Nuyts Archipelago is a group of 19 main islands, plus a number of emerged rocks and submerged reefs, composed primarily of massive granite bases, capped with calcarenite. The complex of islands that make up the Archipelago contain a diverse mix of plants and animals.

Near-shore reefs around most of the islands are comprised of granite and calcarenite blocks. Different reef types support different communities of plants and animals. As granite does not erode as easily as limestone or calcarenite it contains fewer ledges and crevices which can be used by various animals for shelter. In the lee of the Nuyts Islands the reefs usually have greater algal diversity as they are protected from the full force of the south-westerly swell conditions.

Seagrass meadows are a key habitat adjacent to a number of the islands including St Francis Island, Eyre and St Peter Island. Seagrass leaves provide habitat for epiphytes and epifauna (plants and animals that attach to the leaves). Consequently, seagrass meadows are important nursery and feeding grounds for commercially and recreationally important crustaceans and fishes (such as western king prawn, blue swimmer crabs, and King George whiting) as well as habitat and food sources for waterbirds.

St Peter Island is also of particular importance because it has one of the only stands of offshore mangrove communities on the entire South Australian coastline and a spectacular 4km long sand spit in the lee of the island.

## **1.4 Marine species**

The many habitats located within the Nuyts Archipelago Marine Park support a variety of marine and coastal species including fish, sharks, mammals, birds and invertebrates, many of which have

been identified as ecologically important. Refer to Appendix 1 for a more detailed list of species. The Nuyts Archipelago Marine Park features:

- a number of fish species more commonly associated with western and eastern Australia;
- leatherback turtles occasionally visiting the area;
- species of conservation concern and protected species, including the Australian sea lion, southern right whale, white shark and a range of migratory seabirds and shorebirds.

#### 1.4.1 *Plants and algae*

Nuyts Reef to Fowlers Bay and Point Bell are characterised by a particularly high diversity of species of red algae, which is unusual because large brown algae are normally the dominant flora found on most other reefs around the state.

#### 1.4.2 *Bony fish, sharks and rays*

The fish assemblages found around the offshore islands in the marine park have more integrity than anywhere along the South Australian coast.

The macroalgal communities on the reefs also provide habitat for many fish species including King George whiting, snapper, Western Australian salmon, Australian herring (tommy ruff), brown spotted wrasse, gummy shark and whaler sharks. Some of the reef fish species recorded in the Nuyts Archipelago are more common in Western Australia and not usually observed in most parts of South Australia, including the western footballer, western wirrah, blue-tailed leatherjacket and red-lipped morwong. The uncommonly recorded smoothspine leatherjacket species and the stars-and-stripes leatherjacket, both known mostly from eastern Australia, also occur in the area.

Sharks and rays of conservation concern that can be found in the region include the coastal stingaree, whitespotted spurdog, spotted wobbegong, bronze whaler, blue shark, dusky whaler, smooth hammerhead, school shark and the nationally *vulnerable* white shark. The shortfin mako and porbeagle also occur in the area and were recently listed for protection under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The dusky whaler has been nominated for protection under the EPBC Act.

In the warm waters which flow into and around the mangrove forest at Tourville Bay many species including yellow-eye mullet and King George whiting live and feed on plankton and small crustaceans. The linked mangrove, sandy bottom and seagrass meadows around St Peter Island form an important fish nursery.

#### 1.4.3 *Marine mammals*

The West Coast region of South Australia contains three groups of populations of the nationally and state listed *vulnerable* Australian sea lion. Two of these occur in the Nuyts Archipelago Marine Park: Nuyts Reef and Nuyts Archipelago. Breeding sites include Lilliput, Blefuscu, Lounds, Fenelon, West and Purdie islands as well as Nuyts Reef. Purdie Island is one of eight identified locations in South Australian waters where more than 100 pups are produced each breeding cycle (Goldsworthy and Page 2009).

Haul-out sites for the New Zealand fur seal are also located at several sites within the marine park.

Nationally *endangered* and state *vulnerable* southern right whales migrate along this coastline from May to October, calving and resting in several areas along the far west coast including Fowlers Bay.

#### 1.4.4 *Seabirds and local and migratory shorebirds*

The intertidal flats and mangrove forest in Tourville Bay provide breeding, nesting and feeding areas for coastal and seabird species. Breeding birds in the area include black cormorants and white-faced herons and the area also provides notable habitat for pied oystercatchers and sooty oystercatchers.

Invertebrates such as marine worms and cockles burrow into the mud and feed on organic matter trapped there. These invertebrates are in turn a rich food source for wader birds including the grey plover and common greenshanks. Birds such as pied cormorants nest in the mangrove trees and the state *vulnerable* eastern curlew may be found amongst the mangroves on the mudflats.

Most of the islands in the Nuyts complex support extensive seabird breeding colonies. For example, over 100,000 short-tailed shearwaters, or mutton birds, have been recorded on Franklin Island and more than 90,000 on Goat Island. The adult shearwaters breed on the islands from September to January and then leave in April to fly north to feed in the Bering Strait, near the Arctic Circle, with the fledglings leaving a month later.

The St Francis Islands are also significant breeding sites for little penguins, and provide habitat for the state *endangered* fairy tern and state *vulnerable* hooded plover. A significant breeding population (in the thousands) of the white-faced storm petrel is found on Fenelon Island.

Migratory oceanic birds that breed in New Zealand or Antarctica, such as albatross and petrel species, and migratory prions, can also be found in the Great Australian Bight. Many of these are listed nationally as threatened.

#### 1.4.5 Marine invertebrates

Smoky Bay is one of only two areas in South Australia where the small murex gastropod (sea snail) *Favartia (Murexiella) tatei* has been recorded. It may be endemic to South Australia; that is, it may only be found in this state.

Roe's abalone is found along rock platforms in the eastern Great Australian Bight at shallow depths. Several ascidians in the region are only found in South Australia including *Polyandrocarpa simulans*, which is found around St Francis Island.

Rocky intertidal areas are found along the shoreline in the marine park and some are home to the very uncommon species of starfish 'Little Patty' (*Parvulastra parvivipara*). This is one of the smallest live-bearing starfish in the world and lives in only a few places, including the shallow pools on granite substrate at Point Whittlebee and Cape Vivonne.

The St Francis Islands hosts unique and endemic species such as the sponge *Clathria (Dendrocia) curvichela* which has been recorded to date only from south of the St Francis Isles. Species of brain and cabbage coral (*Coscinarea, Turbinaria and Goniastrea* spp) not found elsewhere in Australia, are located near Point Fowler. St Francis Isles is one of the few localities where the endemic gastropod *Anachis fenestrata* (a small dove shell) has been collected and also the cowries *Zoila friendii thersites* and *Z. marginata orientalis*. The egg cowrie *Primovula verconis* (uncommon in southern Australia) has only been found in St Francis Isles.

For further environmental and social information refer to <http://www.marineparks.sa.gov.au>

## 2 ECONOMIC VALUES

The marine environment is an important source of wealth for South Australia and its coastal communities. Marine parks will be designed to accommodate existing economic activities wherever possible. The main economic activities in the Nuyts Archipelago Marine Park are summarised below. Information in the Aquaculture, Commercial fishing, and Mineral and energy resources sections has been provided by PIRSA.

### 2.1 Aquaculture

The South Australian aquaculture industry had a direct output value of \$324 million in 2008/2009 (EconSearch, 2010a). Marine species grown and harvested in South Australia include (but are not limited to) Pacific oysters and mussels (bivalve molluscs), Southern bluefin tuna (prescribed wild caught tuna), abalone, yellow-tail kingfish and other species of finfish (aquatic animals – other than prescribed wild caught tuna – which require regular feeding).

**Table 3** The statewide economic value of aquaculture industries in South Australia, 2008/09 (excludes freshwater aquaculture)

	Gross value of on-farm production (\$m)	Value to downstream* sectors (\$m)	On-farm number of employees (FTE)	Number of employees in downstream* sectors (FTE)
Southern bluefin tuna (prescribed wild caught tuna)	\$157.8	\$16.0	348	58
Bivalve molluscs (oysters)	\$32.6	\$42.6	529	252
Finfish (other than prescribed wild caught tuna)	\$29.2	\$15.4	108	84
Bivalve molluscs (mussels)	\$2.5	\$2.8	114	16
Abalone	\$8.1	\$0	64	0
Other	\$10.9	\$0	44	0

EconSearch, 2010a

\* Downstream activities include processing, transport, retail and food service.

Within the Nuyts Archipelago Marine Park, the bays around Ceduna support an aquaculture industry based mainly on Pacific oysters, but abalone and razorfish are also grown in this region. Aquaculture zone policies are established in Smoky Bay and Cape d'Estrees. A map showing current active sites, applications and aquaculture zone policies can be accessed online through the Aquaculture Public Register at: [http://www.pir.sa.gov.au/aquaculture/public\\_register](http://www.pir.sa.gov.au/aquaculture/public_register)

## 2.2 Commercial fishing

The commercial fisheries that operate in the Nuyts Archipelago Marine Park are:

- Western Zone Abalone Fishery;
- Northern Zone Rock Lobster Fishery;
- West Coast Prawn Fishery; and
- Marine Scalefish Fishery.

The value of each of these fisheries, including the direct and flow-on values, as well as the number of employees and export values, where available, are listed below. Note that the values provided below are for the entire area of the fishery and are not specific to the Nuyts Archipelago Marine Park.

**Table 4** The 2008/09 economic value of fisheries operating in the marine park for relevant fishery areas (figures are not specific to the park area and include catches from outside the marine park boundary).

	Catch value(\$m)	Value of flow-on to other sectors (\$m)	Fishing (FTE) employment	Flow-on (FTE) employment
<b>Abalone (Eyre)</b>	30	20.3	90	102
<b>Abalone (Western Zone)</b>	19.6			
<b>Northern Zone Rock Lobster(Eyre)</b>	19.3	14.5	155	77
<b>Prawn (Spencer Gulf &amp; West Coast)</b>	30.8	71.2	185	342
<b>Marine Scalefish (West Coast Region)</b>	3.2	2.4	40	13

EconSearch 2010 b, c, d and e.

These fisheries are important to regional economies of the area both directly, through employment in each fishery, and indirectly, through a range of additional services such as processing, local transport, marketing, local retail and food services. Each of these activities generates flow-on effects to other sectors, through purchases of inputs and employment of labour.

The Western Zone Abalone Fishery produced about 64% of the State's abalone harvest in 2008/09. This marine park is part of Region B of the western zone which, in 2006, produced about 10% of the total western zone harvest. The area south of Point Bell and Ceduna (fishing area 2) is a very significant harvest area for Region B.

The region is part of the Northern Zone Rock Lobster Fishery, which produces about 20% of the \$105m state-wide southern rock lobster catch. The fishing area adjacent to Ceduna, which includes St Francis Isles and parts of Nuyts Archipelago is an important area to the fishery.

The West Coast Prawn Fishery, which targets king prawn, has 3 licence holders and encompasses regions off Ceduna (including Nuyts Archipelago), Anxious Bay and Coffin Bay. In 2008/09, the West Coast Prawn Fishery contributed about 4.3% of the State's prawn production, valued at almost \$1.26m.

The Marine Scalefish Fishery is a diverse multi species, multi gear fishery that operates across State waters. This region is a significant area for harvesting King George whiting, southern calamari, snapper, Western Australian salmon, Australian herring, blue swimmer crabs, gummy shark and rays.

Fishing charters also operate from a number of locations throughout this region.

There are also some small commercial fishers that operate under the Miscellaneous Fishery in the region.

For further information or to view maps of the fishing regions visit:

[http://www.sardi.sa.gov.au/\\_data/assets/pdf\\_file/0010/99739/No\\_305\\_South\\_Australian\\_Wild\\_Fisheries\\_Information\\_and\\_Stats\\_report\\_200708\\_published.pdf](http://www.sardi.sa.gov.au/_data/assets/pdf_file/0010/99739/No_305_South_Australian_Wild_Fisheries_Information_and_Stats_report_200708_published.pdf)

### ***2.3 Mineral and energy resources***

Currently, offshore South Australia is only lightly explored for oil and gas and no economic discoveries have been made; however, potential exists for giant petroleum accumulations on the continental shelf and slope where recognised exploration targets are similar to those in prolific gas-oil provinces elsewhere in the world. Such discoveries may require access for landing pipeline infrastructure onshore.

The potential for offshore geothermal energy resources has not yet been addressed, however potential exists to utilise geothermal energy in adjacent coastal or inland water settings for a variety of purposes, including power for desalination plants.

No mineral, petroleum or geothermal licences or leases are currently located within this marine park. Mining Lease 714 lies adjacent the park inshore, for gypsum and salt mining (particularly Lake Macdonnell).

### ***2.4 Transport and infrastructure***

Transport and infrastructure provide an important economic contribution to the region, providing for maritime activities such as: shipping ports for import and export of goods; boat ramps for launching of recreational or commercial vessels; jetties for fishing; and breakwaters and groynes for coastal management. For example the Thevenard port was visited by 83 commercial vessels in 2009.

The port of Thevenard is vital for export of mineral products, including production from existing salt and gypsum mining operations and future heavy mineral sands from the world class Jacinth-Hyacinth project.

Note, following consultation on the marine park outer boundaries, existing commercial ports and indenture areas that are heavily trafficked were excluded from the park boundaries in the July 2009 proclamation.

## **2.5 Local tourism**

Tourism is an important economic contributor to the west coast region. The Ceduna District Council area attracts an average of 69,000 overnight visitors annually, who stay an average of three nights each.

Tourists are attracted by the many outdoor recreational opportunities the west coast region has to offer, including fishing and boating, camping, surfing, diving, swimming, coastal sightseeing and whale and seal watching. Recreational fishing from boats and jetties is popular in many areas of the marine park, while access to the coast for surf fishing is provided by a multitude of four wheel drive tracks through the dune systems.

Charter vessels provide for offshore recreational fishing and diving around the Nuyts Reef and other islands of the Archipelago.

## **3 SOCIAL VALUES**

The marine environment is an important recreational and cultural asset for coastal communities. Where possible, marine parks will be designed to recognise and complement sites of cultural and maritime heritage as well as accommodate existing activities. This section highlights the social values of Nuyts Archipelago Marine Park and is separated into three parts:

- Aboriginal and European cultural heritage;
- scenic values; and
- recreational activities and popular locations.

### **3.1 Aboriginal heritage**

Aboriginal people have interacted with the marine environment for many thousands of years and their relationships with the sea remain strong through customs, laws and traditions. Traditional usage, Aboriginal cultural heritage, Indigenous Protected Areas (IPAs), Indigenous Land Use Agreements (ILUAs) and Native Title considerations will be taken into account in developing the management plan for the Nuyts Archipelago Marine Park.

#### **3.1.1 Language Groups**

The Wirangu Aboriginal people have traditional associations with the region, including the marine environment and associated marine life, with many known heritage sites. Other Aboriginal groups such as Yalata and Maralinga Anangu, Mirning and some inland groups may have periodically used the coastal lands of the marine park.

#### **3.1.2 Agreements and Claims**

A group of overlapping Native Title claimants have combined to form one claim known as the Far West Coast Native Title claim. This claim currently includes parts of the Nuyts Archipelago Marine Park.

The Ceduna Keys Marina Indigenous land Use Agreement includes a section of Murat Bay, and has been reached by the people of the Far West Coast Native Title Claim Group, Aboriginal Legal Rights Movement and the District Council of Ceduna.

#### **3.1.3 Sites and Stories**

Unique Aboriginal heritage sites such as constructed fish traps are still visible on the coastline of the marine park and can be seen at several locations, such as Rocky Point, Tourville Bay, Murat Bay and Smoky Bay.

The Government is aware that there may be confidential Aboriginal heritage sites in South Australia's coastal areas. Where possible, these sites will be considered in the planning process. Future management plans will ensure these heritage sites are appropriately respected.

### 3.2 European heritage

First sighted by the Dutch explorer Pieter Nuyts on the most eastward extent of his voyage in the *Gulden Zeepardt* in 1627, the archipelago was named in his honour by Matthew Flinders in 1802. The area was also visited by Nicolas Baudin who left a legacy of French names at many locations.

Whaling was a significant industry in the archipelago. The fragile remains of whaling stations located at Point Fowler and on St Peter Island are protected as State Heritage Places for their historical and archaeological significance. Other whaling sites have been located at Point Bell, Point Peter and Cape Beaufort.

Homesteads, shearing sheds and other remains of farming activities can be found on St Francis and St Peter Islands and Denial Bay Jetty and the State heritage listed McKenzies landing nearby are also reminders of the agricultural history of the area.

There are many shipwrecks, mostly fishing vessels, scattered throughout the park. A number of them, such as the *Waitemata* (1860), *John and May* (1914) and *Helena* (1925) are protected under the *Historic Shipwrecks Act 1976*. The Act protects historic wrecks and associated relics, that are more than 75 years old and prohibits people from taking anything from the wreckage or damaging it. One of the most interesting wrecks is that of the *Eleni K* (not protected) which broke in half near Goat Island in 1966. It was a Liberty Ship, constructed in the USA in 1943 to carry troops and cargo during World War 2, and was later converted to a grain carrier.

A number of conservation parks within this marine park are included in the Register of the National Estate.

Three locations within the park are of geological significance. Eyre Island, Port Le Hunte and Clare Bay are listed as geological monuments. Eyre Island preserves a history of sea-levels and sedimentation from the last 11,000 years. Preserved at Clare Bay is a Pleistocene (2.588 million to 12,000 years ago) wave-cut shore platform and lithified beach deposit.

### 3.3 Scenic values

The scenic quality of South Australia's coast is a significant social, economic and environmental resource. The coastline has high amenity value and includes high quality landscapes, also known as viewsapes. The significance or quality of viewsapes is derived from a combination of landform (relative relief, variety and complexity of landscapes), land cover (nature, scale and variety of vegetation), land use (impact of human activity), water, diversity, naturalism and colour.

The coast west of Ceduna is a remote but often spectacular coastline with high scenic values (Lothian 2005) comprising a wide variety of landforms including high cliffs, headlands and bays, beaches, dunes and mangroves. High scenic values are provided by dramatic and often extensive dune fields and blowouts (Scott Bay, Point Fowler, Nantiby, Bielamah, Cantaby) which are separated by high sheer cliffs and headlands (Scott Point, Cape Adieu, Cape Nuyts and Eyre Bluff). Lesser scenic values have been attributed to low lying coastal areas and areas of mangroves within the marine park (Laura Bay, sections of Murat and Bosanquet Bays and Tourville Bay).

Scenic values of the offshore islands have not been assessed.

Scenic values of coastline in the Nuyts Archipelago Marine Park (Lothian 2005).

Rating	Coastal landform type	Ranking
7.5 – 8.0	High cliffs	High
7.0 – 7.5	Headlands and cliffs	High
6.75 – 7.25	Dunes	Moderate - High
6.0 – 6.50	Low headlands and cliffs	Moderate
5.5 – 6.0	Low dunes	Moderate
5.0 – 5.5	Mangroves	Moderate

For further information on coastal scenic values and viewsapes refer to <http://www.environment.sa.gov.au/coasts/management/coastal-viewsapes.html>

### ***3.4 Recreational activities in the marine park***

The coastal and marine environments of the Nuyts Archipelago Marine Park are very popular with recreational fishers, boat users, snorkellers, scuba divers, swimmers, surfers and sightseers. Examples of these activities are provided below.

#### *3.4.1 Recreational beach and boat fishing locations*

Recreational fishing is a popular past time in South Australia. Recreational fishers collectively harvest significant proportions of the total catch for a number of key species. The total number of recreational fishers for the far west coast (region 2) during 07/08 was 6,622 which amounted to 30,433 days of fishing. (Note figures relate to regions used for reporting fishing activities and include catches from outside the marine park boundary). King George whiting, Southern garfish, Southern calamari and Blue swimmer crab were the most frequently caught species for this region.

Recreational beach fishing is popular, with access to the coast by a multitude of four wheel drive tracks through the dune systems. Davenport Creek, for example, provides a great location for beach fishing to the nearby residents of and visitors to Ceduna.

Recreational fishing from boats occurs at many sites throughout the region, with access via the boat ramps at various locations throughout the park including at Smoky Bay, Ceduna, Thevenard, Nadia Landing, Denial Bay and Fowlers Bay. Jetty fishing is popular at several locations including Smoky Bay, Ceduna, Fowlers Bay and Point Sinclair. Charter vessels provide for offshore recreational fishing around the Nuyts Reef area and other islands of the archipelago.

#### *3.4.2 Popular surfing and swimming beaches*

Cactus Beach is well-known as an iconic surfing location. Shark-safe swimming enclosures are provided at several locations including Point Sinclair and Smoky Bay while the beaches of most towns are also popular swimming locations.

#### *3.4.3 Popular diving locations*

Charter operators take divers to a range of offshore locations in the archipelago.

#### *3.4.4 Other recreational activities in the park*

There are numerous camping/caravan locations around the park including Ceduna, Smoky Bay, Point Sinclair, Fowlers Bay, Laura Bay Conservation Park, Wittlebee Conservation Park, Point Bell Conservation Park and Chadinga Conservation Park.

## APPENDIX 1 SPECIES LIST

This list of some of the species identified in the Nuyts Archipelago Marine Park indicates the diversity of species found there.

### **Plants and algae**

grey mangrove *Avicennia marina*  
large brown algae *Caulocystis* spp

### **Bony fish, sharks and rays**

Australian herring *Arripis georgianus*  
black ray *Dasyatis thetidis*  
blue shark *Prionace glauca*  
blue-tailed leatherjacket *Eubalichthys cyanoura*  
bronze whaler *Carcharhinus brachyurus*  
brown spotted wrasse *Notolabrus parilus*  
coastal stingaree *Urolophus orarius*  
dusky whaler *Carcharhinus obscurus*  
gummy shark *Mustelus antarcticus*  
King George whiting *Sillaginodes punctata*  
leatherback turtle *Dermodochelys coriacea*  
porbeagle *Lamna nasus*  
red-lipped morwong *Cheilodactylus rubrolabiatus*  
school shark *Galeorhinus galeus*  
shortfin mako *Isurus oxyrinchus*  
smooth hammerhead *Sphyrna zygaena*  
smoothspine leatherjacket *Cantheschenia longipinnis*  
snapper *Pagrus auratus*  
southern bluefin tuna *Thunnus maccoyi*  
spotted wobbegong *Orectolobus maculatus*  
stars-and-stripes leatherjacket *Meuschenia venusta*  
Western Australian salmon *Arripis truttaceus*  
western footballer *Neatypus obliquus*  
western wirrah *Acanthistius serratus*  
whaler shark *Carcharhinus brachyurus*  
white shark *Carcharodon carcharias*  
whitespotted spurdog *Squalus acanthias*  
yellow-eye mullet *Aldrichetta forsteri*  
yellow-tail kingfish *Seriola lalandi*

### **Marine mammals**

Australian sea lion *Neophoca cinerea*  
New Zealand fur seal *Arctocephalus forsteri*  
southern right whale *Eubalaena australis*

### **Seabirds and local and migratory shorebirds**

black cormorant *Phalacrocorax sulcirostris*  
common greenshank *Tringa nebularia*  
eastern curlew *Numenius madagascariensis*  
fairy tern *Sterna nereis*  
garfish *Hyporhamphus melanochir*  
grey plover *Pluvialis squatarola*  
hooded plover *Thinornis rubricollis*  
little penguin *Eudyptula minor*  
pied cormorant *Phalacrocorax varius*  
pied oystercatcher *Haematopus longirostris*  
prion *Pachyptila* spp

short-tailed shearwater  
sooty oystercatcher  
white-faced heron  
white-faced storm petrel

*Puffinus tenuirostris*  
*Haematopus fuliginosus*  
*Egretta novaehollandiae*  
*Pelagodroma marina*

***Marine invertebrates***

ascidian  
blue swimmer crab  
cockles  
cowrie  
dove shell  
egg cowrie  
king prawn  
King scallop  
'Little Patty' starfish  
marine worm  
murex gastropod (sea snail)  
mussel  
Pacific oyster  
razorfish  
southern calamari  
southern rock lobster  
sponge  
western king prawn

*Asciacea*  
*Portunus pelagicus*  
Bivalvia  
*Zoila friendii thersites*; *Z. marginata orientalis*  
*Columbellidae*  
*Primovula verconis*  
*Melicertus latisulcatus*  
*Pecten fumatus*  
*Parvulastra parvivipara*  
Annelida  
*Favartia (Murexiella) tatei*  
Mytilidae  
*Crassostrea gigas*  
*Pinna bicolour*  
*Sepioteuthis australis*  
*Jasus edwardsii*  
Porifera  
*Melicertus latisulcatus*

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