

PLAN OF MANAGEMENT FOR THE  
COTTESLOE REEF  
FISH HABITAT PROTECTION AREA

---

FISHERIES MANAGEMENT PAPER NO. 155

---

August 2001

ISSN 0819-4327



## CONTENTS

<b>1.0</b>	<b>INTRODUCTION.....</b>	<b>5</b>
<b>2.0</b>	<b>METHODOLOGY.....</b>	<b>6</b>
<b>3.0</b>	<b>DESCRIPTION OF SITE.....</b>	<b>6</b>
<b>4.0</b>	<b>DESCRIPTION OF USERS .....</b>	<b>7</b>
<b>5.0</b>	<b>VALUES OF AREA.....</b>	<b>7</b>
<b>5.1</b>	<b>Environmental Values .....</b>	<b>7</b>
<b>5.2</b>	<b>Heritage Values .....</b>	<b>8</b>
<b>5.2.1</b>	<b>Aboriginal Heritage .....</b>	<b>8</b>
<b>5.2.2</b>	<b>European Heritage.....</b>	<b>8</b>
<b>5.3</b>	<b>Recreational Values .....</b>	<b>8</b>
<b>5.4</b>	<b>Education and Research Values .....</b>	<b>9</b>
<b>6.0</b>	<b>CURRENT AND POTENTIAL THREATS.....</b>	<b>9</b>
<b>6.1</b>	<b>Recreational fishing .....</b>	<b>9</b>
<b>6.2</b>	<b>Collecting .....</b>	<b>9</b>
<b>6.3</b>	<b>Near-shore Marine Water Quality .....</b>	<b>10</b>
<b>6.4</b>	<b>Foreshore erosion.....</b>	<b>10</b>
<b>7.0</b>	<b>MANAGEMENT STRATEGIES .....</b>	<b>10</b>
<b>7.1</b>	<b>Commercial fishing and aquaculture.....</b>	<b>10</b>
<b>7.2</b>	<b>Recreational fishing .....</b>	<b>11</b>
<b>7.2.1</b>	<b>Line fishing, netting and potting.....</b>	<b>11</b>
<b>7.2.2</b>	<b>Spear fishing (underwater fishing).....</b>	<b>12</b>
<b>7.3</b>	<b>Recreational boating and use of jet skis.....</b>	<b>13</b>
<b>7.4</b>	<b>Collecting .....</b>	<b>13</b>
<b>7.5</b>	<b>Snorkelling and scuba diving.....</b>	<b>14</b>
<b>7.6</b>	<b>Aquatic Eco-tourism.....</b>	<b>14</b>

**7.7 Stormwater, groundwater and nutrient management ..... 15**

**7.8 Information, Interpretation and Management ..... 16**

**7.9 Research and Monitoring..... 16**

**8.0 COMMUNITY INVOLVEMENT IN MANAGEMENT ..... 17**

**9.0 IMPLEMENTATION ..... 18**

**Figure 1 Location and context map of Cottesloe Reef Fish Habitat Protection Area**

## 1.0 INTRODUCTION

The Cottesloe reef system stretches intermittently for approximately 4.4 kilometres from a point 300 metres south of the artificial surfing reef at the Cable Station to North Street, Cottesloe (Figure 1).

It is located on a limestone shelf, which is known locally as the Cottesloe Fringing Bank. This shelf extends approximately 1.5 km offshore from the beach. The depth of the reef system varies, according to the contours of the submarine landform. Limestone pinnacles, elevated platforms and water-eroded limestone outcrops form most of the surface reef structure. In places, sea-grass patches and kelp beds occur within 100 metres of the shoreline.

The Cottesloe reef system is a healthy, flourishing marine system, which is considered by marine scientists to have attributes unique to the Perth metropolitan area. The Cottesloe reef and seagrasses provide a habitat for the weedy seadragon (*Phyllopteryx taeniolatus*) and the rare leafy seadragon (*Phycodurus eques*).

The reef is readily accessible to the general public and intensively used by locals and other Perth metropolitan residents, and is therefore vulnerable to human impacts.

The Cottesloe Marine Protection Group (CMPG) first proposed to nominate the Cottesloe reef system as a Fish Habitat Protection Area (FHPA) under Section 115 of the *Fish Resources Management Act (FRMA) 1994*.

The CMPG successfully applied for two FISHCARE grants to fund the preparation of a Draft Management Plan for a proposed FHPA to protect the Cottesloe reef system. The Draft Plan was prepared in consultation with the Department of Fisheries and released by the latter for a three-month public review period in August 2000.

Submissions received during this period were reviewed by Department of Fisheries staff, and, where possible, concerns raised within the submissions were reflected in a revised Draft Plan of Management, which was endorsed by the Minister for Forestry and Fisheries and made available for public review for thirty days, in accordance with Section 118 of the *FRMA 1994*. Submissions received by the Department of Fisheries on the revised Draft Plan of Management were again reviewed by staff and amendments made to the document, where possible.

This document is the final Plan of Management for the Cottesloe Reef FHPA. The significant contribution made by the CMPG and members of the community in the preparation of this plan is acknowledged and appreciated by the Department of Fisheries.

The overall objective of the Plan of Management is to promote and encourage protection of the Cottesloe Reef aquatic habitat and involve the community in its management. It is anticipated that the establishment of the Cottesloe Reef FHPA will provide a framework, through regulations and education, to manage human activities

that have, or may have, a destructive impact on the conservation values of the reef system.

The Plan of Management is due for review in 2010.

## **2.0 METHODOLOGY**

This Plan of Management proposes that the Cottesloe Reef FHPA be established pursuant to Section 115 of the *FRMA 1994*. It has been prepared to meet the requirements of Part II, Division 1 of the Act and has been endorsed for release by the Minister for Forestry and Fisheries.

The FHPA is to be established for:

- (i) the conservation and protection of fish\*, fish breeding areas, fish fossils or the aquatic ecosystem; and
- (ii) the management of fish and activities relating to the appreciation or observation of fish.

*\*NOTE: The FRMA 1994 defines 'fish' as an aquatic organism of any species (dead or alive) except for the higher vertebrates and includes parts of an organism, such as a shell. Under this broad definition, all the biological components of the [Cottesloe] aquatic ecosystem with the exception of birds, mammals, reptiles and amphibians, are defined as fish. This includes the reefs themselves' (Fisheries Management Paper No 117, 1998:49)*

In Western Australian waters, all whales, birds and reptiles are fully protected under the *Wildlife Conservation Act (1950)*, which is administered by the Department of Conservation and Land Management.

This Plan of Management contains:

- A description of the Cottesloe Reef FHPA.
- A description of the environmental, heritage, recreational, research and education values of the area.
- An identification of current and potential threats to the area.
- Management options.
- An indication of community involvement in the management of the area.
- A plan of action to implement management strategies.

## **3.0 DESCRIPTION OF SITE**

The following area is included within the Cottesloe Reef FHPA:

*The coastal waters of the Indian Ocean covering the Cottesloe reef system from North Street to the southern boundary of the Town of Mosman Park, and westwards to 800 metres from high water mark.*

## 4.0 DESCRIPTION OF USERS

The Cottesloe reef system has a number of stakeholder groups including the general public, school and university groups, and recreational divers and other fishing groups from throughout the Perth metropolitan area. The reef is also visited by an increasing number of tourists from within Western Australia, inter-state and overseas.

## 5.0 VALUES OF AREA

Cottesloe Reef is characterised by limestone pinnacles, elevated platforms and water-eroded limestone outcrops. The FHPA also includes areas of sea-grass and kelp beds.

The habitat and resident marine community of the Cottesloe Reef area have similar features to those of reef systems within the Marmion Marine Park and the Shoalwater Islands Marine Park. However, the reef has been identified by marine biologists as having characteristics which are unique to the Perth metropolitan coast.

The Cottesloe Reef ecosystem is highly valued by the local and wider community because of its location close to a highly populated urban area. This allows for the reef system to be easily accessed by a large number of people.

The significance of the reef system has been illustrated by the high number of submissions - from individual members of the public, fishing, boating and underwater diving groups, community organisations, and state and local government authorities - that were received during the public consultation stages of the two draft Plans of Management.

### 5.1 Environmental Values

The Cottesloe Reef system contains a unique and diverse range of marine habitats. These include sand, sand with seagrass, limestone reef with large kelp and macro-algae, sponge beds and garden bottoms. Each of these habitats supports many different species of invertebrates, fish, aquatic plants and other organisms.

Specifically, the unique slope of the reef platform at Mudurup Rocks provides habitat for delicate animals such as feather stars and small molluscs, which are protected from heat and desiccation during low summer tides.

An assemblage of sea corals, cucumbers and sponge gardens is found on deeper reefs within the Cottesloe Reef ecosystem, while both weedy and leafy seadragons are found among algae and seagrasses within snorkelling depth. The assemblage of corals, sea cucumbers, sponges and associated invertebrates is believed to be a unique remnant of a fauna once common in Cockburn Sound (Marsh, pers. com.).

It is also a nursery area for Port Jackson sharks (*Heterodontus portusjacksoni*) and other elasmobranchs including stingrays, and is a squid habitat and breeding ground.

The diversity of this living reef ecosystem in close proximity to a large urban population is significant and has been recognised as worthy of protection by the community during public workshops facilitated by Department of Fisheries, and in public submissions received during the preparation of this Plan of Management.

## **5.2 Heritage Values**

The Cottesloe reef system has value to both Aboriginal and European people.

### **5.2.1 Aboriginal Heritage**

The value of the Cottesloe Reef system to Aboriginal people is significant.

The Department of Fisheries recognise the need to conduct an anthropological assessment of the Aboriginal heritage values of the site. This assessment should include consultation with Aboriginal people with traditional associations with the area.

### **5.2.2 European Heritage**

The wreck of the barque *Elizabeth* (1830-1839) is located on the Reef at South Cottesloe (32°00.8'S, 115°44.9'E).

The presence of submarine cables at the southern edge of the Cottesloe Reef system is also of heritage significance. They were installed in 1926, and once linked WA to South Africa via the Cocos Islands.

The cables provide a historical reminder of Australia's previous international communication links with the world. The site from where the cables were laid is still commonly referred to as 'Cable Station'.

## **5.3 Recreational Values**

The Cottesloe Reef system and its waters are highly popular for a variety of recreational activities including surfing, body boarding, windsurfing, swimming, paddle skiing, line fishing, spear fishing, snorkelling and scuba diving.

Cottesloe Beach is a well-recognised tourism attraction. Its scenic beauty and popularity continue to attract increasing numbers of local, interstate and international visitors to the area.



## **5.4 Education and Research Values**

The educational and research values of the Cottesloe Reef system include:

- The opportunity for school groups, universities and the general public to observe 'first hand' the diverse marine ecosystem on and near the reef, in close proximity to the Perth urban area.
- The presence of a representative assemblage of predominantly temperate marine flora and fauna in close proximity to the urban area provides an excellent and relatively cheap opportunity for research.

Establishment of the Cottesloe Reef FHPA is also likely to encourage community groups and possibly schools, universities and other institutions to participate in on-going research of the reef, which may engender further community awareness and protection of the reef.

## **6.0 CURRENT AND POTENTIAL THREATS**

### **6.1 Recreational fishing**

The Cottesloe Reef system is located close to populated urban areas, and is easily accessible from the shoreline. As a result, the reef area and nearby beaches are heavily used throughout the year, most particularly during the summer months.

The cumulative impact of activities, in particular spear fishing, has resulted in the depletion of resident reef fish stocks in the vicinity of the reef. There is a high degree of community concern that continued spear fishing may further deplete the remaining reef fish stocks. Due to the depletion of the larger edible fish species, spear fishers target small (and often inedible) fish and octopus.

Damage from boat anchors is also considered to present a threat to the integrity of the reef and a source of disturbance to its marine organisms.

### **6.2 Collecting**

The Cottesloe Reef FHPA is currently part of the licensed fishing area for the commercial marine aquarium fishery. The recreational collecting of shells also occurs on a regular basis.

Removal of marine creatures and habitat for aquarium and other purposes can upset the balance of the reef ecosystem.

### 6.3 Near-shore Marine Water Quality

Extensive algal blooms of *Cladophora* carpet much of the inshore reef and seagrass areas in summer and autumn. Algal blooms can be symptomatic of nutrient enriched conditions, which are heightened during these seasons.

Nutrient-rich stormwater flows from a number of stormwater outlets located along the Cottesloe beachfront, which, in combination with other cumulative low-level impacts from polluted groundwater, contributes to seasonal algal blooms. Seasonal discharge from the Swan River, and the Water Corporation's Swanbourne Ocean Outlet which discharges secondary treated effluent, also contributes to nutrient enrichment of the near-shore marine water in the vicinity of the Cottesloe Reef system.

### 6.4 Foreshore erosion

The discharge of stormwater in large quantities after heavy rainfall can cause localised erosion of the beach and coastline. As noted in Section 6.4, there are a number of stormwater outlets located along the Cottesloe beachfront.

## 7.0 MANAGEMENT STRATEGIES

The following management strategies for the Cottesloe FHPA are listed to meet the requirements of Section 117 of the *FRMA 1994*.

A number of these strategies have been formulated in response to issues raised during the public meetings and workshops on the Cottesloe FHPA, and in submissions received on the previous Draft Plans of Management.

### 7.1 Commercial fishing and aquaculture

The waters of the Cottesloe Reef FHPA are adjacent to one of Perth's most popular metropolitan beaches, and are intensively used by casual swimmers, paddlers, and divers. In addition, the area is used for activities such as surf carnivals and ocean swimming competitions.

There are limited opportunities for commercial fishing and aquaculture within the FHPA because of existing commercial fishing closures, and current levels of recreational activity.

*Strategy:*

1. Prohibit commercial fishing and aquaculture within or in close proximity to the Cottesloe Reef FHPA.

## 7.2 Recreational fishing

### 7.2.1 Line fishing, netting and potting

Recreational net fishing has been prohibited under Fisheries Order No. 512 (1991) in the Cottesloe area since the early 1990s as part of a wider netting closure covering most metropolitan beaches.

Recreational line fishing from the beach, groynes and boats for continental shelf fish species such as herring, tailor, garfish, whiting and squid is a popular activity at Cottesloe. The collection of abalone and rock lobster is also popular in season.

A number of non-target species are caught incidentally, including wrasse, small reef sharks such as Port Jackson sharks (*Heterodontus portjacksoni*) and other elasmobranchs (cartilaginous fish) including stingrays. These non-target fish are not generally kept for eating, but may be injured or killed by anglers.

Unwanted bait, plastic bait wrapping and bags are frequently abandoned on the groynes by a small minority of 'careless' fishers. Also, blood or offal used for attracting fish is sometimes left behind, making an unsightly mess. Besides littering the groyne, this activity can have a detrimental on water quality in its immediate vicinity.

Species taken by anglers in the vicinity of the Cottesloe Reef FHPA are mainly those that are widely distributed throughout the west coast bio-region, and recreational fisheries research indicates that stocks are sustainable at current catch levels. Improved protection and fishery productivity is best achieved by broadly applied input controls focused around the biology of the fish in question, rather than by the arbitrary application of limited spatial closures.

A final report on a five-year management strategy for recreational fishing on the west coast of WA has recently been completed by the 'West Coast Recreational Fishing Working Group' (August 2001). This strategy was prepared in response to a need to manage the increasing pressure on WA's aquatic environment and fish stocks from growing numbers of recreational fishers, increasing coastal development, and the demands of various key user groups in areas such as Cottesloe.

A key aim of the management strategy outlined in the West Coast Recreational Fishing Working Group's report is ensuring that the biodiversity of fish stocks, their habitats and sustainability are preserved. It recommends that management should be based on the best available information and that a precautionary approach should be adopted to minimise risks to fish stocks.

The report recognises the value of recreational fishing, and suggests that recreational fishing rules should be designed to protect the sustainability of stocks and manage the total recreational catch, as well as protect fish at vulnerable stages of their life cycle. The benefits of improved recreational fishing should then flow back to the recreational fishers, resulting in maintained or even improved fishing quality and sustainability.

While this report is clearly aimed at a much larger area than just the Cottesloe Reef, the aim and management strategies are clearly applicable to its ecosystem.

In the case of the Cottesloe Reef FHPA, the key biological issue is the potential for localised depletion of non-target species by angling, and its impact on the population structure and composition of reef communities, and the localised abundance of these species. One objective of the FHPA is to provide an example of a near-shore reef community not affected in any significant way by fishing.

It is recognised that environmental factors play a key role in determining the nature and structure of fish assemblages, and the abundance and distribution of each species, and changes to populations, are often not the result of fishing. However, minimising the impact of recreational line fishing on non-target species and reducing the impact of litter associated with recreational fishing should help to maintain biodiversity in the Cottesloe Reef area,

**Strategies:**

1. Develop a code of practice and education strategy encouraging careful handling and return to the water of unwanted fish by anglers.
2. Prohibit the taking or landing of sharks and stingrays within the FHPA.
3. Prohibit the cleaning of fish and the leaving of offal or bait within the FHPA.
4. Prohibit the use of blood or offal for the purpose of attracting marine life.

**7.2.2 Spear fishing (underwater fishing)**

In past years, spear fishing has been a popular activity at Cottesloe Reef. Reef fish and shark species including wobbegongs, wrasse and cobbler were targeted. Spear fishing presents a risk to other users of the area and its cumulative impact has resulted in the depletion of resident fish stocks.

The use of spear guns, gidgees, Hawaiian sling or 'other like device' is prohibited under existing Town of Cottesloe *'Beach and Beach Reserves Local Law No.3'* (April 1999) within 200 metres offshore.

One of the main objectives of establishing an FHPA is to preserve a relatively unfished marine reef ecosystem for education, research and conservation purposes, therefore encouraging its 'non-extractive' use. Spear fishing is considered to be an activity that is contrary to this objective and incompatible with the values of the FHPA.

**Strategy:**

1. Prohibit all forms of spear fishing within the FHPA.

### **7.3 Recreational boating and use of jet skis**

There are no boat launching facilities in the vicinity of Cottesloe Reef, but at times small dinghies anchor within the reef area for the purpose of line fishing or diving. Surf skis and other paddle craft are also commonly used in the vicinity of the reef.

The use of dinghies in the area is unlikely to create a potential water quality problem if boats are maintained adequately, and sullage and other waste material from boats is disposed of in accordance with the 'Draft Strategy for Management of Sewage Discharge from Vessels into the Marine Environment' (Department of Transport, 2001). However, there is a potential risk of damage to the reef system by anchors, which could be managed through the installation of environmentally friendly boat moorings and the prohibition of anchoring in the area.

The Department of Fisheries has been granted funding by Environment Australia to install at least four environmentally friendly moorings within the Cottesloe Reef FHPA. The location and number of moorings will be determined following consultation with key stakeholder groups.

Jet skis are infrequently used in the Cottesloe Reef area, but it is recognised that this activity may become increasingly popular. In view of the high number of people using the area for swimming and other passive recreational pursuits, the use of jet skis is considered to be incompatible with these activities.

#### **Strategies:**

1. Prohibit the anchoring of any craft within the FHPA.
2. Install environmentally sensitive public boat moorings and encourage their use by the boating public.
3. Seek to prohibit the use of jet skis in the FHPA.

### **7.4 Collecting**

Rock, seaweed and reef fauna, including anemones, sea urchins and shellfish, may be collected easily from the rocky reef platforms along Cottesloe Beach and their incidental depletion is a concern. Individuals licensed to take aquarium fish also operate within the Cottesloe Reef area.

The purpose of establishing a FHPA is to conserve and protect fish, fish breeding areas, fish fossils and the overall aquatic ecosystem. It is therefore important that all parts of the reef ecosystem remain 'in-situ', to ensure the long-term sustainability of a healthy reef ecosystem.

Rocks, seaweed, shellfish and other marine organisms are an integral part of this ecosystem. The Department of Fisheries has recently legislated to prohibit the collection of coral and 'live rock' for recreational purposes.

It is recognised that at times the sampling of marine flora and fauna may be necessary as part of on-going research and monitoring proposals within the Cottesloe Reef FHPA. In this case, exemptions for the collection of samples of marine flora or fauna would need to be sought from the Department of Fisheries under the provisions of the *FRMA 1994*.

**Strategies:**

1. Prohibit the collection of aquarium fish specimens within the FHPA.
2. Prohibit the collection of marine flora and fauna, including live shell fish, coral and live rock (substrate which has living marine organisms attached to it) within the FHPA.

## 7.5 Snorkelling and scuba diving

Cottesloe Reef is a popular snorkelling and scuba diving site, particularly as it is so easily accessible from the Perth metropolitan area. These activities promote public awareness of the natural value of the reef habitat, and are consistent with the objectives of a FHPA

**Strategies:**

1. Promote snorkelling and scuba diving as non-extractive recreational activities. This should include information about dive locations, and diving regulations.
2. Promote underwater photography as a non-extractive recreational activity.

## 7.6 Aquatic Eco-tourism

Aquatic eco-tourism is generally a non-extractive, nature-based method of tourism, promoting visitation to areas with recognised ecological values. Eco-tourism ventures are considered to be a useful way to increase public awareness and education about environmental values, and at the same time provide a financial income to tour operators.

The Department of Fisheries has licensing and management arrangements for the aquatic tour industry. This requires all eco-tourism ventures to have an Aquatic Eco-tourism licence before they are allowed to operate.

To facilitate the assessment of these licence applications, the Department has prepared a Ministerial Policy Guideline (No.12), entitled '*The assessment of applications for the granting, renewal or transfer of fishing tour operator licences and aquatic eco-tourism operators licences*'. This document provides guidelines to assist the Executive Director of the Department of Fisheries to assess applications for eco-tourism ventures, to ensure that the operation is undertaken in a responsible manner.

Although aquatic eco-tourism is by its nature believed to have a minimal impact on fish and fish habitats, the assessment guidelines encourage a precautionary approach

until the relative impacts of eco-tourism ventures on fish resources and fish habitat has been established.

**Strategy:**

1. Prepare policies and operating guidelines for environmentally sensitive and controlled eco-tourism ventures, in accordance with the '*The assessment of applications for the granting, renewal or transfer of fishing tour operator licences and aquatic eco-tourism operators' licences*' (Ministerial Policy Guideline No. 12).

## 7.7 Stormwater, groundwater and nutrient management

Water quality within the near-shore marine environment is affected by nutrients from stormwater and groundwater discharge from the urban catchment adjacent to Cottesloe Beach. Nitrogen in particular is known to contribute to macroalgal growth in marine communities. A major source of nutrients within the catchment is excessive fertiliser use on gardens, parks and public open space (Dr. S. Appleyard, pers. com.).

The management of diffuse sources of nutrient pollution is obviously difficult, as it involves numerous groups and individuals working in partnership with local government and State government agencies to tackle the problems through an Integrated Catchment Management (ICM) approach. ICM measures are used in other urban areas within Perth to manage water quality problems, for example discharge into the Swan River.

Awareness and education programs need to continue to maintain the local community's understanding of existing nutrient management problems and the need to alter current practices.

Stormwater discharge from the urban catchment is also another significant source of nutrients into the near-shore marine environment. The adoption of improved design principles which include water infiltration 'at source', for example, through the use of permeable paving and soak wells, and incorporation of 'nutrient traps' may help reduce nutrient discharge. This is likely to be a costly exercise that may require the involvement of State and, possibly, Commonwealth government.

**Strategies:**

1. Coordinate, in cooperation with relevant government agencies and schools, a long-term water quality and catchment management plan, focusing on the Cottesloe area.
2. Encourage community education programs, such as 'The Sea Begins in Our Streets and Gardens' campaign, to increase public awareness of the potentially destructive effects on the marine environment of high nitrate and phosphate fertilizers, detergents and other household and garden chemicals used in the coastal catchment.

3. Encourage the Town of Cottesloe and Town of Mosman Park to install stormwater nutrient-stripping and calming devices, and stormwater discharge 'at source'.
4. Promote the use of low nutrient turf and grass within the Town of Cottesloe.
5. Discourage the disposal of potentially harmful substances into stormwater drains that could be discharged into the marine environment.

## **7.8 Information, Interpretation and Management**

A primary objective of this Plan of Management is to raise public awareness, appreciation and understanding of the biodiversity and conservation values of the Cottesloe Reef FHPA, and to promote community stewardship and management of it.

An understanding of the Aboriginal heritage values of the area should be encouraged. This information is required to ensure that management and interpretation programs are consistent with these values.

The Department of Fisheries recognise that the management of the FHPA will primarily be through the community. It is anticipated that the CMPG, in cooperation with the Town of Cottesloe and Town of Mosman Park, will have a vital role in the coordination of management strategies for the FHPA, with support from key local and State Government agencies where appropriate.

An example of community stewardship is the fish identification signs that have been installed at strategic locations along the Cottesloe foreshore by the CMPG and Department of Fisheries. These signs draw to public attention the need to protect and care for the reefs and coastal waters. The signs illustrate the more common fish species found on the reefs and are highly popular with snorkellers, tourists, school study groups and general beach users.

### **Strategies:**

1. Endorse the protection of the Cottesloe FHPA through interpretive exhibits and photographic displays at educational and environmental facilities.
2. Support the Volunteer Community Reefwatchers' training program.
3. Encourage training on the role and value of the FHPA for local government authority rangers.
4. Support an anthropological assessment of the Aboriginal heritage values of the site, including consultation with Aboriginal people with traditional associations to the area.
5. Prepare and install signage indicating the extent and purpose of the FHPA.

## **7.9 Research and Monitoring**

In encouraging use of the FHPA, it is recognised that increased public usage may put additional pressure on the fragile reef ecosystem. It is therefore vital to ensure that there is:



- Appropriate baseline monitoring of the marine ecosystem, utilising existing data where possible;
- A coordinated on-going monitoring program to compare and interpret data over a period of time. This should include the monitoring of recreational activities and so identify which areas of the FHPA are under the greatest user pressure.
- An integrated approach to research proposals within the FHPA is adopted.

In devising long-term monitoring and research programs, the natural variability of the marine ecosystem will be taken into consideration. In view of the high level of community involvement in the protection and management of the FHPA, it is also important to ensure that monitoring and research proposals are suitable for implementation by the community.

**Strategies:**

1. Promote gathering of baseline information including fish counting, habitat mapping.
2. Coordinate the interpretation of information gathered through baseline surveys and on-going monitoring programs.
3. Encourage research of marine flora and fauna within the FHPA, to develop an understanding and appreciation of the Cottesloe Reef FHPA.
4. Support the preparation of on-going monitoring programs to determine:
  - (a) The effect of divers and eco-tourism ventures on the marine environment.
  - (b) The impact of climate change and oceanographic processes.
5. Encourage the trial of monitoring methods developed by the Australian Marine Conservation Society (AMCS) in cooperation with the Department of Conservation and Land Management (CALM) as part of Phase III of 'The Marine Life of Western Australia' program.
6. Ensure that there is an integrated approach to research proposals conducted within the FHPA, to maximise the baseline information.

## **8.0 COMMUNITY INVOLVEMENT IN MANAGEMENT**

Under the provisions of the *FRMA 1994*, the declaration of a FHPA requires that there be a demonstrated degree of community involvement in the management of the area.

The CMPG originally nominated the Cottesloe Reef system as a FHPA, and has initiated strong community involvement in its protection through the Volunteer Community Reefwatchers' training program. This program highlights the habitat and natural heritage value of the Cottesloe coast and reef system and will promote public education about FHPA management measures.

The CMPG community education campaign has been successful in raising levels of awareness of the Cottesloe Reef system and developing within the community a sense of conservational stewardship for the area. The CMPG has also affiliated with the

South Cottesloe Coastcare Association Inc. to combine volunteer resources to enable an effective joint management program of Cottesloe's marine and coastal resources.

The high level of community interest in the FHPA is also illustrated by the significant number of submissions received on the previous draft plans of management that expressed support for the FHPA.

## **9.0 IMPLEMENTATION**

This Plan of Management has been prepared following extensive public consultation. It is the responsibility of Department of Fisheries, in consultation with community groups, to coordinate the implementation of the management strategies contained within this Plan, and to provide a progress report to the community each year.

The following plan of action for the future management of the Cottesloe Reef FHPA is proposed by the Department of Fisheries:

- Implement the management strategies contained within this Plan, which relate to the restriction of specific fishing activities under the provisions of the *FRMA 1994*, as soon as possible.
- Prepare and install signage and environmentally friendly boat moorings within the FHPA, in consultation with key stakeholder groups, within 12 months of the declaration of the FHPA.
- Establish a Working Group with the CMPG, the Town of Cottesloe and the Town of Mosman Park, to establish mechanisms to implement the management strategies contained within this Plan, and investigate potential sources of funding to implement recommendations where appropriate.

This plan will be subject to review in 2010.