

# Exploring Western Australia's marine parks

Secondary teachers' guide



Department of  
Parks and Wildlife





# Exploring Western Australia's marine parks

Our marine areas are unique and many of them rival their terrestrial counterparts in scenic grandeur. Western Australia's coastline spans more than 13,500 kilometres and is home to some of the world's most remarkable ecosystems and marine wildlife, including massive whale sharks, humpback whales and several threatened species of sea turtles. Many of the state's marine plants and animals are found nowhere else in the world.

The west coast of Western Australia is ranked second highest out of 18 of the world's marine biodiversity hotspots (based on species richness and the number of species found nowhere else) and fourth lowest in terms of threatening processes.

Marine parks and reserves have been progressively established in Western Australia since 1987 to conserve marine biodiversity and provide special places for people to enjoy, appreciate and learn about the state's spectacular marine life.

There are 16 marine parks and other marine reserves in Western Australia, including the Ngari Capes and Lalang-garram / Camden Sound marine parks created in June 2012 and the Eighty Mile Beach Marine Park created in January 2013. Plans to create another three marine parks in the Kimberley region as part of the state government's Kimberley Science and Conservation Strategy are well underway.

This upper primary teachers' guide designed to raise awareness of Western Australia's marine parks has been prepared by the Department of Parks and Wildlife with financial support from ExxonMobil Australia.

Parks and Wildlife has the lead responsibility for protecting and conserving the nature of Western Australia on behalf of the community. This includes managing the state's marine parks and other marine reserves, as well as national parks and other conservation reserves. The department currently manages lands and waters with a total area of more than 28 million hectares, an area equivalent to the state of Victoria.

**ExxonMobil**



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**Parks and Wildlife**



# Introduction – why do we need marine parks?

Our coastline spans more than 13,500 kilometres and is home to some of the world's most remarkable ecosystems and marine wildlife, including massive whale sharks, humpback whales, several threatened species of marine turtles, playful sea lions, leafy seadragons and little penguins. Many of Western Australia's marine plants and animals, particularly those in southern temperate waters, are found nowhere else in the world.

Western Australia's marine areas are unique and rival their terrestrial counterparts in scenic grandeur. Think of Australia's largest fringing reef at Ningaloo Marine Park (in the Ningaloo Coast World Heritage Area), the vast seagrass meadows and their grazing dugongs at Shark Bay Marine Park (also in an amazing World Heritage Area) and the spectacular coral atolls of the Rowley Shoals Marine Park, which rise almost vertically from the seafloor hundreds of metres below. These areas are special and, like national parks on land, warrant protection.

Our coastal waters are valued by Western Australians. The wide range of environmental, cultural, commercial and recreational values they offer generate employment and revenue and provide people with a source of pleasure. Marine recreation and tourism are very important in this state. However, the capacity of our marine areas to continue to provide these benefits depends on them remaining healthy.

Some human activities can pollute, degrade and deplete the marine environment, and put the survival of many marine animals at risk. Marine parks help to protect the marine environment so that our generation and future generations have the opportunity to enjoy a healthy marine ecosystem, with the full range of different marine animals, plants and their habitats that live in it today.

Multiple-use marine parks and reserves balance use of marine resources and environmental protection.

## Marine parks:

- create recreational opportunities for people and a chance to enjoy these beautiful natural areas
- play an important role in scientific research and educating visitors about marine conservation, marine ecology and marine park management
- protect culturally significant sites and maritime heritage such as historic shipwrecks
- help protect areas known to be important for some large marine mammals whose numbers were depleted by hunting, such as the blue whale breeding area at Ngari Capes Marine Park and the incredible humpback whale breeding area in Camden Sound Marine Park
- support a growing marine ecotourism market which includes whale watching, sea lion and dolphin and dugong viewing, scuba diving, snorkelling, kayaking and glass \-bottomed boat tours
- help protect assets important to commercial and recreational fishers, such as schooling sites, nursery areas, spawning and breeding grounds.

This teachers' guide for secondary school students has been produced by the Department of Parks and Wildlife, with financial support from ExxonMobil Australia, to help educate people about Western Australia's unique marine parks.



Photo: Eva Boogaard/Parks and Wildlife

# 1. Marine parks: spreading the word

## Objective

- Determine the main parks, reserves and landscape management priorities of the Department of Parks and Wildlife, in a marine context

## Estimated duration

1 hour, 30 minutes plus a one-day excursion to a nearby marine park (such as a visit to Penguin Island and the Shoalwater Islands Marine Park - phone 9591 1333 to book)

## Conditions/equipment:

- DVD: *Naturally Ningaloo. Wags and Kelly or Wild Encounters – Shark Bay*. Available from SeaDog Films Pty Ltd, Leighton@webace.com.au
- TV advertisement, Marine parks (sponsored by the State Government in 2007). Available online at [www.marineparks.dpaw.wa.gov.au](http://www.marineparks.dpaw.wa.gov.au).
- Brochure: National, marine and regional parks in Western Australia – A visitor's guide to the State.
- LANDSCOPE magazine, Spring 2000. Special issue on national parks – Celebrating 100 years in Western Australia.
- LANDSCOPE article, 'Making waves: marine park awareness', Spring 2007.
- Access to the Parks and Wildlife website: [www.dpaw.wa.gov.au](http://www.dpaw.wa.gov.au). Focus on the marine parks site: [www.marineparks.dpaw.wa.gov.au](http://www.marineparks.dpaw.wa.gov.au)
- Display materials.
- Site for display or talk e.g. local library or primary school.

## Assessment criteria:

1. Views the DVD about Ningaloo Reef or Shark Bay.
2. Contributes to the discussion on effective ways to protect the marine environment.
3. Assists with preparing and setting up a display and a script and ideas for a TV advertisement and giving a short presentation about protecting the marine environment.

## Procedure:

1. Students view the DVD *Naturally Ningaloo* or *Wild Encounters – Shark Bay*.
2. Students consider the importance of protecting an area rich in biodiversity such as that within the Ningaloo and Shark Bay marine parks.



3. Students read the 'Introduction - why do we need marine parks?' on page 1 and note down comments using the following questions as a guide:
  - a. What is the main message?
  - b. What other messages are being given?
  - c. What is it about this that captures their interest?
  - d. What do they think is an effective way of raising awareness about a proposal to establish marine parks?
4. Identify the special problems that arise from managing a marine park or reserve, compared with those of a land-based park or reserve. For example, establishing marine parks and reserves is not the only step we can take to ensure that the condition of the areas remain pristine; a handful of Department of Parks and Wildlife rangers in a boat cannot hope to monitor even a fraction of the activities taking place in a marine park or reserve.
5. Consider the use of public awareness campaigns or a display and the importance of involving the general public in monitoring and management programs. Students can be an effective force in helping to monitor the marine environment in such programs as CoralWatch, and to spread the word to other students about the importance of caring for the marine environment.
6. Prepare and set up a display or other effective campaign about the value of marine parks on World Environment Day (5 June) or during Biodiversity Month (September) in your school or local library.

You could use this as a basis for visiting your local primary school to spread the word about protecting the marine environment.

### Additional references:

Available from Department of Parks and Wildlife Customer Service. Order through WA Naturally publications. Phone: (08) 9219 9072, Fax: (08) 9219 9639 or email [customer.service@dpaw.wa.gov.au](mailto:customer.service@dpaw.wa.gov.au).

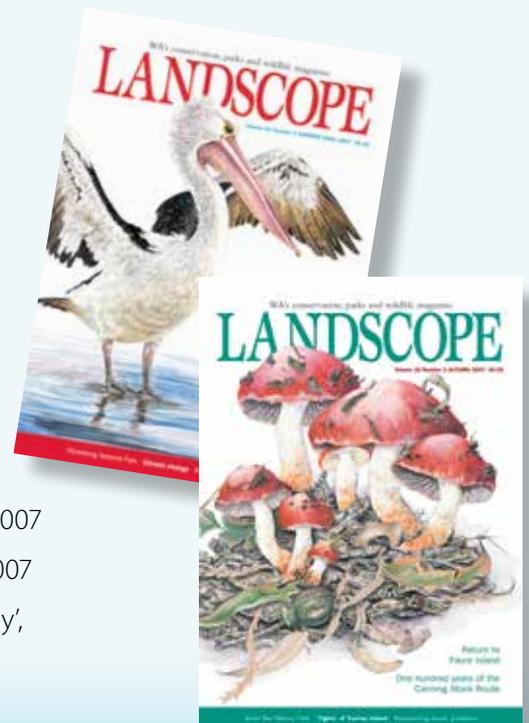
Book: *Shark Bay: Twin bays on the edge* by Carolyn Thomson-Dans.

Brochures:

- *Walpole and Nornalup Inlets Marine Park*
- *Swan Estuary Marine Park*
- *Jurien Bay Marine Park*
- *Montebello Islands Marine Park*
- *Shoalwater Islands Marine Park*
- *Marmion Marine Park*
- *Rowley Shoals Marine Park*
- *Shark Bay Marine Park*

LANDSCOPE articles about marine parks and reserves.

- 'Marine park proposed for the deep south', Summer 2006-2007
- 'Oceans of opportunity for our southern coasts', Autumn 2007
- 'Delivering marine and coastal outcomes for the community', Autumn 2006



## 2. Multiple use of marine parks and reserves

### Objectives

- Identify the purpose of parks, reserves and landscape management in Western Australia
- Determine the main parks, reserves and landscape management challenges faced by the Department of Parks and Wildlife
- Identify parks, reserves and landscape management best practice
- Recognise compatible and incompatible uses in marine parks and reserves

### Estimated duration

45 minutes

### Conditions/equipment:

- Work sheet 2.1, 'Multiple uses of marine parks and reserves'. One copy per group.
- Work sheet 2.2, 'Activities in marine park zones and reserves'. One copy per group.
- Resource sheet 2.1, 'Marine parks and reserves revealed'.
- Brochure, *National, marine and regional parks in Western Australia – A visitor's guide to the State*.

### Assessment criteria:

1. Completes the activity of zoning different activities into either a marine park zone or a reserve.
2. Involved in discussion on zoning and multiple

### Additional activity:

Interested students with access to the internet can determine the locations of different marine parks along the WA coast by exploring the Department of Parks and Wildlife marine park website: [www.marineparks.dpaw.wa.gov.au](http://www.marineparks.dpaw.wa.gov.au).

### Procedure:

1. Working in groups, students write captions on Work sheet 2.1, explaining the photographed activities that can occur in marine parks or reserves.
2. Students allocate the number and name of each photograph to a zone in a marine park or a reserve in the Work sheet 2.2 table. They then read Resource sheet 2.1 to check if they have allocated the activities to zones correctly.





3. Ask a representative from a group to describe the purpose of multiple use marine parks and consider how the zoning attempts to prevent different uses interfering with one another e.g. commercial fishing excluded from sanctuary zones. Students note the benefits to themselves of marine parks.
4. In groups locate the nearest marine park to the class using the brochure *National, marine and regional parks in Western Australia*. If any of the students have visited this park, ask if they have noted the zones and the signs.  
  
If not, suggest that a representative of the group contact the local authority of the area or a Department of Parks and Wildlife office to find out what they can and cannot do in this park. They share this information with the whole class. Students discuss and note whether marine parks are likely to benefit them as individuals.
5. Generate discussion on how marine parks lessen the impact of climate change, i.e. coral reefs protected in marine parks and reserves are more resilient and more able to withstand the effects of climate change than those with no protection.
6. Discuss as a group whether marine parks give complete protection to individual organisms and populations (corals and reefs within sanctuary zones have good protection, whereas fish or migratory wildlife species may move in and out of zones and therefore remain vulnerable).
7. What sort of areas would be important to protect in sanctuary zones (coral reefs, nursery areas, seagrasses, mangroves, intertidal platforms, marine biodiversity hotspots)?

# Work Sheet 2.1

Name \_\_\_\_\_

Date \_\_\_\_\_

## Multiple uses of marine parks and reserves

Write a caption explaining the activity in each photograph below.  
Then allocate the names to a zone in a park or in a reserve (Work sheet 2.2)



1.

\_\_\_\_\_



2.

Photo – Silver Star Cruises

\_\_\_\_\_



3.

\_\_\_\_\_



4.

\_\_\_\_\_



5.

\_\_\_\_\_



6.

\_\_\_\_\_



7.

\_\_\_\_\_



8.

\_\_\_\_\_



9.

\_\_\_\_\_



10.

\_\_\_\_\_



11.

\_\_\_\_\_

## Work sheet 2.2

Name \_\_\_\_\_

Date \_\_\_\_\_

### Activities in marine park zones and reserves

Marine parks protect scenic and biologically important areas of ocean and coastline (usually to high water mark) including beaches, islands and all marine plants and animals within these habitats.

Marine parks cater for multiple uses and have different zones – areas of ocean set aside for a particular purpose.

Insert the number and name of each activity in the correct box below (see Work sheet 2.1).

Note: some activities can occur in more than one zone.

#### Sanctuary zones

'Look but don't take' zone. Only activities that do not harm the marine animals, plants and habitats are allowed.

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#### Recreational zones

Allow for recreational fishing and other recreational activities. Commercial extractive activities are not permitted, i.e. no commercial fishing.

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#### General use zones

Sustainable recreational and commercial activities are allowed.

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#### Special purpose zones

Protect specific habitats from a particular threat or allow for particular activities, i.e. wildlife protection, seagrass conservation, mangrove protection.

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#### Marine nature reserves

Marine nature reserves are for conservation and scientific research with the highest level of environmental protection. There is only one such reserve in WA. Can you name it?  
(see [www.marineparks.dpaw.wa.gov.au](http://www.marineparks.dpaw.wa.gov.au))

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# Marine parks and reserves revealed

## What can you do in a marine park?

### Sanctuary zones

These 'no-take' areas are 'look but don't take' zones. Recreational fishing, commercial fishing and collecting are not allowed in this zone. Only activities that do not harm the marine animals, plants and habitats are allowed. These include: snorkelling, scuba diving, surfing, beach walking, swimming, boating, low impact tourism like whale watching, water sports such as kayaking, windsurfing and canoeing.

### Recreational zones

Allow for recreational fishing and other recreational activities. Commercial fishing and other extractive commercial activities are not permitted, i.e. no aquaculture or collecting of aquarium fish and no fishing from guided charter vessels. Non-extractive commercial activities such as viewing marine life from glass bottomed boats are allowed.

### General use zones

Recreational and commercial activities are allowed as long as you abide by Department of Fisheries bag, size and seasonal limits.

**Before visiting a marine park, always 'know your zones' and find out what you can and can't do.**

## Why do we need marine parks?

### They protect unique marine environments

Western Australia's coastline spans more than 13,500 kilometres and is home to some of the most amazing marine life in the world. Marine parks protect these unique marine and coastal environments and the animals and plants that live within them.

### They help protect marine environments for present and future generations

Some activities by people can pollute, degrade and deplete the marine environment and put the survival of many marine animals at risk.

### They provide opportunities for people

Marine parks:

- create recreational opportunities for people and a chance to enjoy the marine environment;
- play an important role in scientific research and educating students and the general public about marine conservation, marine ecology and marine park management;
- protect culturally significant sites and maritime heritage such as historic shipwrecks and artefacts;
- help to protect assets important to commercial and recreational fishers, such as schooling sites, nursery areas, spawning and breeding grounds; and
- support a growing marine ecotourism market for such activities as whale watching, sea lion, dolphin and dugong viewing, scuba diving, snorkelling, kayaking and glass bottomed boats. Have a go: manage marine park activities



Photo: Holly Raudino

## 3. Have a go: manage marine park activities

### Objectives

- Demonstrate an understanding of the value of parks, reserves and their landscapes
- Demonstrate an understanding of the priorities of parks, reserves and landscape management
- Identify different viewpoints on activities permitted in marine parks

### Estimated duration

45 minutes x 2

### Conditions/equipment:

- Resource sheet 3.1, 'Information for role cards'.
- Work sheet 3.1, 'Map of an imaginary marine park area'.
- Powerpoint and hard copy sheet of map (to be prepared by teacher before the session).
- Green, yellow, purple and blue felt pens i.e. standard colours to depict zones (see colours in brochure of marine park).
- Brochure: *National, marine and regional parks in Western Australia*. Spring 2007.
- Brochure of your local marine park: *Marmion Marine Park; Shoalwater Islands Marine Park; Swan Estuary Marine Park; Jurien Bay Marine Park; Ningaloo Marine Park Sanctuary Zones and Muiron Islands Marine Management Area; Shark Bay Marine Park and Hamelin Pool Marine Nature Reserve; Walpole and Nornalup Inlets Marine Park; Rowley Shoals Marine Park; Montebello Islands Marine Park*. Order through WA Naturally Publications, Ph: (08) 9219 9072, Fax (08) 9219 9639 or email [customer.service@dpaw.wa.gov.au](mailto:customer.service@dpaw.wa.gov.au).
- LANDSCOPE article, 'Making waves: marine park awareness'.
- Butchers' paper.
- Video camera – optional.



## Assessment criteria:

1. Participates in the role-play.
2. Contributes to the discussion on outcomes of the role-play and the different viewpoints of the groups.
3. Evaluates their role as a group leader and in public debate in conflict resolution.

## Procedure:

1. Prior to the session, decide how many students will comprise each group and prepare the role cards.
2. Reflect on the Level 2 session, 'Multiple use of marine parks and reserves'. Remind students that parks cater for multiple uses and have different zones - areas of ocean set aside for a particular purpose i.e.:
  - a. Sanctuary zones - 'Look but don't take' zone. Only activities that do not harm the marine animals, plants and habitats are permitted.
  - b. Recreation zones - Allows for recreational fishing and other recreational activities. Commercial extractive activities are not permitted i.e. no commercial fishing. Mining and petroleum developments (extraction) are also not permitted.
  - c. General use zones - Sustainable recreational and commercial activities are permitted.
  - d. Special purpose zones - Protect specific habitats from a particular threat or allow for particular activities e.g. wildlife protection, seagrass conservation, mangrove protection.

Refer to your local marine park brochure for examples of protected areas in this type of zone.

3. Pin up a list, on butchers' paper, of the names and purposes of zones, in large type for the class to refer to during the role-play.
4. Set the scenario for the role-play to be performed by the students, which is:

To stop one type of use interfering with another, through the establishment of zones for different purposes within a park. The ideas and views of members of the public help in making decisions on where zones should be situated. Different people possess different points of view about the way marine parks should be zoned.
5. Explain that this role-play game demonstrates how people might put forward their points of view about park zoning.
6. Students randomly draw their role card and group from a hat.
7. Each group meets and decides on strategies, using the role cards and reference materials. The atmosphere of the activity should dictate the appropriate dress for the presentation.
8. The Chairperson, following the instructions on the role card, notifies each group of the order of presentation, the place and time. Each member may be given a limited time in which to speak, or one speaker may be assigned to present the group's decisions.
9. When the meeting is convened, each group, dressed according to their roles, presents their case about the zoning, referring either to the projected map or to a copy on paper.
10. The secretary records all points on large sheets of butchers' paper. The chairperson can allow heckling and should be prepared for a noisy session.
11. The authority group makes a decision about the zoning and announces it at the end of the presentation, or the following day, whichever is appropriate. The group should outline the reasoning behind its decision.

12. The role-play should be followed by a debriefing session to discuss:
- the students' views on the zoning plan decided by the authority group;
  - how much the students feel the zoning plans were influenced by the presentations; and
  - the actual role-play game.
13. As a class, comment on the value of public meetings to resolve conflict between interest groups.

<b>Park Authority group</b>	
Chairperson	1
Secretary	1
Artist	1

<b>Members of the public</b>	
Conservationists	3
Professional fishers	3
Recreational fishers	3
Scientists	3
Indigenous people	3
Eco-tourist resort developers	3
Recreational divers	3
Reporters	1-2

### Information for role cards

#### 1. Conservationists

Your overall aim is to prevent damage to the natural environment and to reef life brought on by human activities; therefore, you want to see a large SANCTUARY ZONE established. You realise, however, that people should be allowed to experience the beauty and wonder of the reef world; therefore, you emphasise that they must do this in such a way as to not destroy plants and animals and their habitats as they do so. You are willing therefore, to support limited areas for recreational uses. You agree with scientists that research into reef life is important if we are to find out how to protect and conserve it. You wish to support scientists in the establishment of a SPECIAL PURPOSE ZONE (at least for non-manipulative research which does not lead to the destruction of any reef life.)

You do not believe that the establishment of an eco-tourist resort is in the conservation interests of the area as the buildings for hotels, accommodation units, water storage, and the need to dispose of human wastes may destroy plant life and animal habitats. You only support day-trips by tourists who return to the mainland at night. You are not willing therefore, to see areas around islands included in a GENERAL USE ZONE, as this may allow tourist facilities to be built in the future.

You are not convinced that professional fishers need access to the marine park as there are fishing grounds elsewhere that can be used.

You would be dissatisfied at the establishment of a large GENERAL USE ZONE. The use of reef resources by the Indigenous people does not worry you as they have been using them for many years without causing ill-effects.



Photo: Gilbert Stokman



Photo: Department of Fisheries

## 2. Professional fishers

You argue that your livelihood depends on access to the rich resources of the marine park which is a valuable source of reef fish.

A large GENERAL USE ZONE would suit you well. In general, you believe that no special laws are required to make you conserve fish stocks, as you only do yourself harm by overfishing.

You are aware, however, that fish stocks can run low after intensive fishing has occurred in limited areas; so you are willing to support the establishment of SPECIAL PURPOSE ZONES for habitat protection, especially where heavy fishing has already occurred. Sharkfin Shoals and Hoof Reef have been heavily fished as they are so close to the port of Westhaven. You fear that the establishment of a tourist resort will bring more recreational fishers to the area. You therefore support the conservationists in opposing the inclusion of areas around an island in the GENERAL USE ZONE.

You do not object to the Indigenous people being given special rights to catch fish and other animals for their own food; but you would object to their using these rights to establish a profit-making fishing industry.

You are aware that outsiders often object to you fishing the reef, so you will try to avoid antagonising other user groups. You also know that the MARINE PARKS AND RESERVES AUTHORITY has, in the past, given you a good deal.

## 3. Recreational fishers

In general, you are not willing to let governments and their organisations tell you where you can and cannot fish. The establishment of large zones, which restrict your freedom to fish where you want to is opposed by your group.

Your interests are best served by a large RECREATION ZONE since you would be allowed to fish with rods, handlines, and spear guns (as long as you are free diving without the use of compressed air such as SCUBA) and you would not have to compete with commercial fishers.

You point out that the marine park has, for a long time, been a favourite area of recreational fishers. Your members have invested in motorboats that are large and powerful enough to get to the reefs of this section from Westhaven Port. They are not really big enough to go further afield. Nor do you have much time during weekends and holidays to travel far to fishing grounds.

You point out that professional fishers have more time and usually have boats that can go much further than those of recreational fishers.

You object to most of the restrictions on the areas, and to the use of various reefs by conservationists and indigenous people.

## 4. Scientists

In the parts of the marine park which are furthest from Westhaven, there are still areas that have been left relatively untouched by people. You would like to see SANCTUARY ZONES established in these areas, but allow scientific sampling (under appropriate licences) to occur. Your research indicates that:

1. Booby Island is an important nesting site for threatened masked boobies; and
2. Turtle Islands are the only islands in marine park where turtles come to nest in large numbers from October to February. The young turtles are all hatched by March.

You argue that it is important to protect both of these islands by making them SANCTUARY ZONES. An acceptable alternative would be for these islands to be classified under a SPECIAL PURPOSE ZONE protected for scientific purposes.

You have also found that the lagoon between Glory and Three-tree islands is a stretch of water where turtles mate in season. You would like to see this become a SANCTUARY ZONE as well. At least, you would be dissatisfied to see a tourist resort built on either of these islands, as consequent boating movements would result in more boats striking the turtles. Rubbish, such as plastic bags in the water, brought in by visitors to the resort, will also kill turtles if they ingest them by mistake.

You support the Indigenous people in seeking a SPECIAL PURPOSE ZONE for Indigenous use, but only at the south-western end of Three-tree Island.



## 5. Indigenous people

Your home islands are just to the south of the marine park. You have, for centuries, travelled by raft among the islands and reefs of the marine park, gathering eggs and catching birds, fish and turtles. These are still very important to your diet.

You point out that your people can legally continue gathering and hunting anywhere in the marine park to provide food for your own needs. You remind the public that the zoning system cannot legally take away that special right.

Until 100 years ago, your people used traditional fish traps at the south-western end of Three-tree Island. This is a site of particular cultural value to you; so you wish to see a SPECIAL PURPOSE ZONE for Indigenous use only set up there. You point out that anthropologists also need this site preserved in order to study the traditional fishing methods of your people.

In general, you feel that both professional and recreational fishers are a threat to your traditional food supplies. You do not favour large areas being made into GENERAL USE or RECREATION ZONES unless there are plenty of protected habitat areas in SPECIAL PURPOSE ZONES.

## 6. Eco-tourist resort developers

Your case rests on two major arguments:

1. You wish to develop an eco-tourist industry that will attract many tourists from other states and from overseas. The development will abide by Australia's accepted eco-tourism principles. Thus, you are bringing wealth to the region with minimal impact on the natural environment.
2. You are making it possible for many people to come and enjoy the glory of the Western Australian reefs without too much discomfort and with minimal impact on the area.

You argue that the international tourist, especially, is used to and expects excellent facilities for accommodation, eating, drinking and travel. These needs can be met only by building an eco-resort on an island that is not far from Westhaven (which has an international airport). It must have calm, deep water close at hand for a small boat harbour. Glory Island seems to meet all these requirements.

You want access to some of the outer reefs to take your visitors on snorkel trips or to moored landing platforms.

You would not be happy to have professional fishers, spear fishers, and shell collectors removing the animals that make the area around your resort so attractive to tourists.

All your needs seem to be satisfied by having the reefs around Glory Island included in a SANCTUARY ZONE.

If, however, these reefs are situated in one of the GENERAL USE ZONES, you would prefer that a SPECIAL PURPOSE ZONE for wildlife viewing and protection be established on them.



Photo: Colin Ingran



Photo: Peter Nicholas

## 7. Recreational divers

Your group lives on the mainland close to the marine park and, for many years, you have enjoyed diving on its reefs and around the islands. You love to experience the scenic underwater environment (you are a keen underwater photographer and appreciate the diversity of different animals that live on the reef, from turtles to tiny and colourful mantis shrimps) and also like to use your diving skills to catch crayfish and abalone (in season). You always fully abide by the rules and regulations of the Department of Fisheries when diving for a 'feed'. While you love collecting these delicious morsels, you regard the protection of the marine environment as being of paramount importance, as you would not like to see a decline in the condition and health of your beloved underwater backyard over time.

You are also aware that crayfish and other heavily fished animals have been proven to increase dramatically in size and diversity following the establishment of SANCTUARY ZONES. You know that this has a spillover effect on areas elsewhere in the marine park, with these animals and their larvae or spawn moving into surrounding areas. You also know that you will be able to continue to dive in any SANCTUARY ZONES (as long as you don't remove any animals or plants from them) and that the diving is likely to become more spectacular after they have been declared, with fish and other animals being able to grow to larger sizes in these unexploited areas.

You therefore strongly support SANCTUARY ZONES, although you would like to see areas zoned in the marine park where you can continue to dive for food resources.

You have noticed that crayfish have been getting harder to obtain over the past few years, and you feel that this is mainly due to the activities of commercial fishers. You would therefore like to see at least one (preferably more) of your favourite crayfish collecting spots included in RECREATION ZONES, where only recreational, and not commercial users, may fish. Two of your favourite areas for collecting crayfish are Bommie and Hoof reefs.

One of your favourite dives is an historic wreck site at Quarter Moon Reef. Although it already has full legal protection to prevent removal of historic artefacts, a huge array of spectacular fish and other creatures live in and around the wreck. You would like to see a SANCTUARY ZONE declared around this wreck to ensure it remains one of the best dives in the marine park.

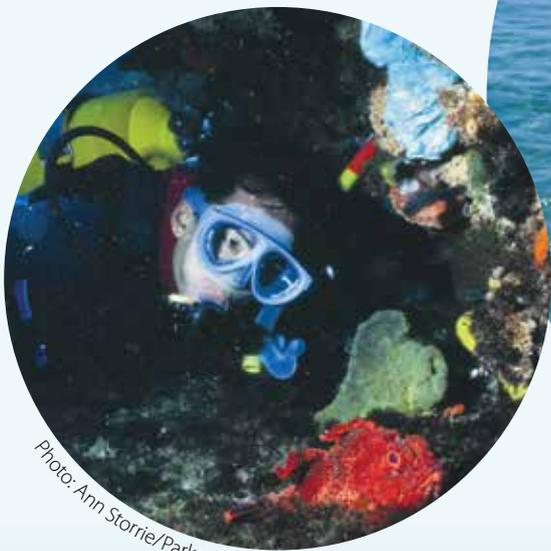


Photo: Ann Storrie/Parks and Wildlife



Photo: Tourism WA

## Chairperson of the meeting

You are a representative of the Marine Parks and Reserves Authority in which the marine park is vested. You are to chair this meeting and, with others from the authority, make a decision about the zoning at the end of the meeting.

In general, you should:

- maintain firm control of the meeting;
- be seen as fair to all sides, yet firm when you have made a decision;
- be quick-witted and to act decisively before problems get out of control;
- be clear in your own mind (or have it written down before the meeting begins) how the meeting should proceed;
- listen carefully to each case being put forward and ask questions to clear up details that were not fully explained by any spokesperson; and
- guide your Marine Parks and Reserves Authority group to make the zoning decision.

Start the meeting by making the following statement: 'I declare the meeting open. The purpose of this public meeting is for all groups interested in the zoning of the marine park to air their points of view. The authority will consider these viewpoints in the formulation of a proposed zoning plan and will then invite further comment.'

Remind each group of the order in which each will present their case. (Decide for yourself the full order before the meeting and inform the groups.) Announce the name of each group by inviting their spokesperson/s to come forward to present their case. After all cases have been presented and spokespersons questioned, close the meeting by announcing: "I thank all those who have put forward their case today and the audience for their orderly behaviour. A public announcement will be made when the proposed zoning plan is ready for your examination.'

Your Marine Parks and Reserves Authority Group may then make its announcement, or wait until the following day, and then explain your decisions.

## Secretary to the meeting

You are a representative of the Marine Parks and Reserves Authority at this meeting.

Your job is to make sure that the main points of each interested group or person are recorded for consideration by the authority group.

To help you do this you could:

1. ask each spokesperson to provide a summary of main points for your use;
2. add to this any further point you consider important or which comes out in the questioning session following each speech; and
3. record all speeches with a video camera if available. To assist the various groups, record the points on the smart/chalkboard or an overhead transparency as the speech proceeds. The groups can then revise the main points using your record, when the speakers are finished.

If any point is unclear, or you want more details, ask the speaker (through the chairperson) further questions. Your record of the main points will be required when the authority group draws up a zoning plan.

You will be contributing to the authority's decisions with your chairperson.

## Graphic designer of the Marine Parks and Reserves Authority group

You have four main responsibilities:

1. Producing a poster to announce the public meeting.
2. Sketching various zoning ideas on the map of the marine park at the meeting.
3. Helping other members of the authority group to come to a decision on the zoning of the area.
4. Producing a map after the meeting showing the zones decided upon by the authority group.

The poster should make the following announcement:

### NOTICE OF PUBLIC MEETING

The Marine Parks and Reserves Authority invites members of the public to present submissions and information relevant to the zoning of the marine park. A PUBLIC MEETING will be held for this purpose at the TOWN HALL OF WESTHAVEN PORT on ... (date) ... beginning at ... (time) ...

## Reporters (Radio and TV)

You are interested in reporting:

1. the purpose of the meeting;
2. the general attitude of each group;
3. one or two of their main points;
4. any interesting events at the public meeting;
5. any clash of interests among groups; and
6. what the 'authority' plans to do next.

You may 'broadcast' your report 'live' from somewhere outside the Unit's base or you may tape it for playback later, and/or record the meeting on a video camera.

Your report will be made more interesting if you can capture short interviews with several of the leading figures at the meeting.

Learn how to use the video camera before you attempt to record your news broadcast.

Have someone else introduce your broadcast by stating: 'this is (choose a suitable station name) News. We are now crossing to Westhaven Port for a report from our roving reporter (your name).'

You could present a newspaper report on the main decisions after the meeting. Display it on the wall.

Acknowledgment: Copyright GBRMPA: Adapted from original of the Great Barrier Reef Marine Park Authority.

# Work sheet 3.1

Name \_\_\_\_\_

Date \_\_\_\_\_

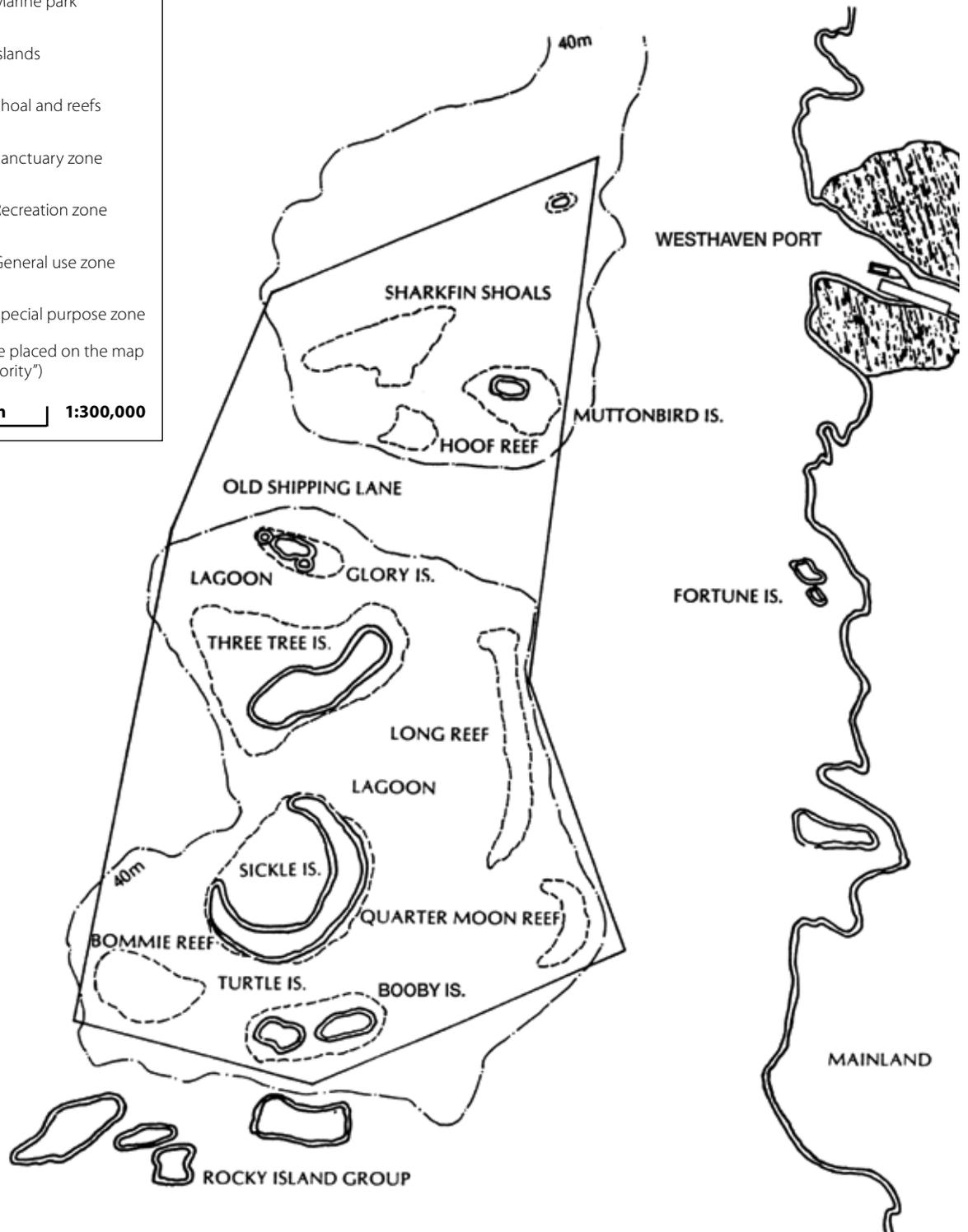
## Map of an imaginary marine park area

**Legend**

-  Marine park
-  Islands
-  Shoal and reefs
-  Sanctuary zone
-  Recreation zone
-  General use zone
-  Special purpose zone

Zones: (to be placed on the map by the "authority")

**10km**      **1:300,000**



## 4. Marine matters

### Objectives

- Identify the need for environmental management
- Determine the main environmental management priorities and threatening processes that affect Western Australia's environment
- Identify the dominant pressures on Western Australia's marine environment

### Estimated duration

45 minutes or field excursion

### Conditions/equipment:

- 'Key findings' (Marine) of the *State of the Environment Report: Western Australia 2007* – page 164 and page 168.**
- LANDSCOPE articles, 'Understanding the reef', Winter 2006 and 'Corals in crisis', Winter 2008. Available online.**
- Butcher's paper.**
- Local beach – short excursion if school is close to the sea.**
- Resource sheet 4.1, 'Marine debris'.**



### Assessment criteria:

1. Participates in creating a concept map of human impacts on the marine environment.
2. Makes the link between their behaviour and the main pressures on WA's marine environment.

### Procedure:

1. If your school is situated close to the sea, much of this session could be done on a beach excursion.
2. Remind students of any local issues relating to the beach and sea that came to light during the session, 'Local biodiversity: changes through time' in Module 5.
3. In groups, brainstorm and note down the impacts that they, or other people, had on the marine environment during past visits to the beach while snorkelling, diving, boating or fishing e.g. anchor damaging coral; plastic and other litter left on the beach; marine animals or plants collected and left to die on the beach; fish hook and tackle caught in rock under water and not retrieved. Each group then reports these back to the Unit and discusses how they could have reduced the impacts.
4. As a class, create a concept map on butcher's paper, summarising the impacts and how to reduce them.
5. Students read the 'Key findings' section and assess whether the activities included on the concept map have contributed in any way to the key findings.

6. Students with internet access look at the photographs, their captions and the first page summary of the two *LANDSCOPE* articles and summarise, in one sentence, the main message of each. The aim of this exercise is to demonstrate to students that Western Australia has a relatively pristine coastal environment, some of which is protected in marine parks. However, there are pressures to develop these areas to fulfil the demands of an expanding population both locally and worldwide.

### Additional activity

Visit the Department of Parks and Wildlife marine parks website: [www.marineparks.dpaw.wa.gov.au/marine-park-protectors/marine-litter-facts.html](http://www.marineparks.dpaw.wa.gov.au/marine-park-protectors/marine-litter-facts.html) to find out how to become a marine park protector and note some interesting facts about marine litter.



Photo: Carolyn Thomson-Dans/Parks and Wildlife

## Resource sheet 4.1

### Marine debris

Marine debris is emerging as an issue of concern for Western Australia's coastal areas.

#### Where does debris come from?

- Litter thrown overboard from boats.
- Litter that gets carried into the marine environment from the land or beaches.
- Fishing equipment.
- Items dumped in other parts of the world that are circulated by currents.

#### What are the detrimental effects?

- Death or injury to wildlife.
- Reduction in aesthetic (beauty) value.
- Pollution of marine and beach environments.

#### What happens to marine animals?

- They become entangled in discarded fishing gear, plastics and other lost items. This can lead to decreased mobility, infection, amputation and drowning.
- Turtles, whales and sea birds are especially at risk of entanglement.
- Debris is often mistaken as prey and eaten. This may also lead to internal injuries, digestive track blockages and infection.

#### What else happens?

- Debris can have negative impacts on tourism and fisheries.
- Debris can cause injuries to beach goers and divers.

Adapted from the *State of the Environment Report: Western Australia 2007*. Marine Emerging Issue.



This sea lion was eventually captured 10 months after it was first sighted and Parks and Wildlife staff were able to successfully remove the rope. The sea lion survived.



A rope in the mouth of this minke whale (above) caused it to starve and strand at Dunsborough. Photos – Parks and Wildlife

## 5. Marine surveys: many challenges

### Objectives

- Identify appropriate methods used in the practice of nature conservation
- Identify methods used by DPaW for nature conservation
- Acknowledge the differences between survey methods for marine and terrestrial environments
- Identify the challenges of marine surveys



### Duration

- 2 hours

### Conditions/equipment:

- DVD: *Naturally Ningaloo*. Wags and Kelly. Wet and Dry Productions [www.exmouthdiving.net](http://www.exmouthdiving.net) or [wagsy@westnet.com.au](mailto:wagsy@westnet.com.au). Fifty-five minute movie showing underwater scenes and spectacular vision of Cape Range National Park and Ningaloo.
- Resource sheet 5.1, 'Marine survey and monitoring methods'. One per pair of students.
- LANDSCOPE article: Summer 2007-08, 'Capes coast beneath the surface.' Pdf available online.
- LANDSCOPE article: Autumn 2008, 'Science in the sea'. Available online.
- Resource sheet 5.2, 'Challenges associated with underwater survey and monitoring work' (for teachers).
- Work sheet 5.1, 'Challenges associated with underwater survey and monitoring work'.
- Department of Parks and Wildlife website: [www.marineparks.wa.gov.au/dive-in-to-marine-parks/index.html](http://www.marineparks.wa.gov.au/dive-in-to-marine-parks/index.html).
- Whiteboard.

### Procedure:

1. Students read LANDSCOPE articles: 'Capes coast beneath the surface' and 'Science in the sea' prior to the session.
2. Indicate to students that the aim of this session is to make them aware of the special challenges faced by researchers involved in marine conservation survey and monitoring work.
3. As a class, view the DVD *Naturally Ningaloo* to encourage discussion on the need to carry out marine surveys.
4. In pairs, students note in dot points the methods being used to carry out underwater surveys in two proposed marine parks. Students also look at the photographs in the LANDSCOPE articles, 'Capes coast beneath the surface' and 'Science in the sea', noting the use of underwater video by researchers.

5. Students locate the position of the proposed marine parks using 'Dive into marine parks' at [www.marineparks.dpaw.wa.gov.au](http://www.marineparks.dpaw.wa.gov.au).
6. In small groups, students complete Work sheet 5.1, 'Challenges of underwater survey and monitoring work'.
7. Each group shares their ideas with the rest of the class and adds to their list with reference to Resource sheet 5.1.



### Assessment criteria:

1. Views DVD *Naturally Ningaloo*.
2. Summarises methods used for underwater surveys.
3. Compares the challenges of marine survey work with those of terrestrial surveys.

### Additional references:

- *LANDSCOPE* article: Summer 1997-98, 'Wonders of our Southern Seas'.
- CD ROM: *Marine Life of Western Australia*, which illustrates the biodiversity of marine life with colour photographs and information on many species. Contact the Department of Parks and Wildlife's Marine Science Program. Phone: (08) 9334 0140.

### Alternative activity:

Students prepare a colour poster using photographs and captions explaining the methods used to conduct surveys in marine environments.

### Marine survey and monitoring methods

Extracts from *LANDSCOPE* article: 'Science in the sea'

'The proposed Dampier Archipelago Marine Park will cover about 122,000 hectares and protect the waters around most of the islands in the archipelago...'

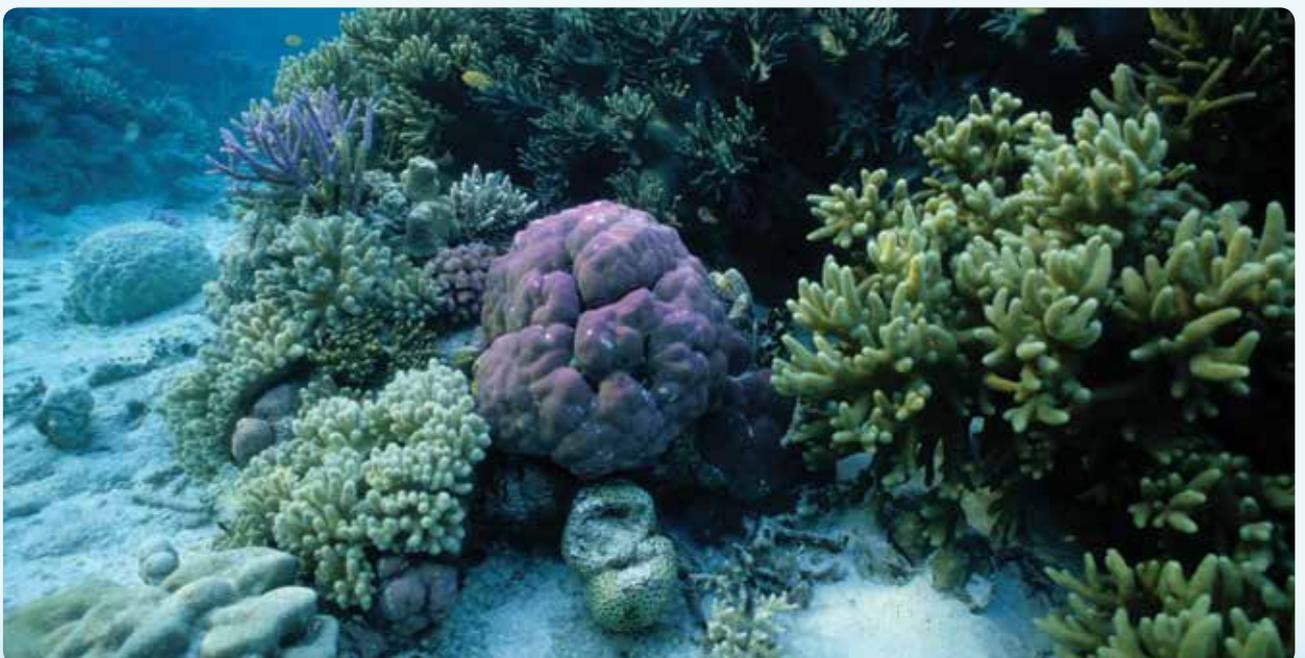
'The Department of Parks and Wildlife's marine scientists decided that the first survey would focus on coral reef habitat (future surveys will target different fish habitats). Survey sites with similar coral and coral species were selected to minimise the effects of habitat variability on changes to fish assemblages.'

'The Department of Parks and Wildlife survey team, led by marine research scientist Shannon Armstrong, recorded coral reef communities and their associated reef fish, both within and outside proposed sanctuary zones. Six 50-metre-long transects were surveyed at each of six sites at both Legendre Island and Sailfish Reef...'

'These areas were chosen for several reasons. They included areas within proposed sanctuary zones; they offered good stretches of coral reef on which to locate transects; and they will also allow scientists to make comparisons with historic data...'

'Divers worked in groups of three. The first diver swam along the transect recording the abundance and length of fish using an underwater stereo-video, closely followed by a second diver who recorded transect length. The third diver recorded the cover of corals and other plants and animals attached to the sea floor along the transect again using an underwater video...'

'Some larger fish species targeted by recreational fishers may avoid scuba divers but are likely to be successfully sampled using baited remote stereo-video. This technique involves lowering baited video cameras to the seafloor to record the size and numbers of fish during set time intervals...'



Corals in the Dampier Archipelago.

### Challenges associated with underwater survey and monitoring work

- Weather conditions, influencing wind and waves, limit the access to inshore sampling sites.
- The amount of time to conduct research is limited by the water depth and the air supply to the diver if using tank air. Swell and currents move the researcher and research equipment unless anchored to a point.
- Many plants and animals are in constant motion which makes measuring and recording more difficult.
- Visibility can be limited because of sediment disturbance or plankton blooms\*.
- Scientists and field workers must have diving skills as well as training in research techniques.
- The cold temperature of the water in southern latitudes of the State can limit the time spent in the water by a diver.
- Communication between diver scientists is more difficult than on land.
- Estimation of distance and size of objects is more difficult than on land as everything appears enlarged underwater.
- Storms can shift large amounts of sediment in a short period of time obscuring fixed monitoring sites.
- The high cost of marine conservation work due to the need for reliable boats, training and diving equipment.

\* Plankton bloom is a rapid, temporary increase in the population of aquatic micro-organisms which discolours the water.





If you find a sick or injured native animal,  
contact the Department of Parks and  
Wildlife's 24-hour emergency number:  
**WILDCARE (08) 9474 9055**

**Publisher**

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Locked Bag 104 Bentley Delivery Centre  
Bentley WA 6983  
[www.dpaw.wa.gov.au](http://www.dpaw.wa.gov.au)  
Editor: Carolyn Thomson-Dans  
Curriculum links: Elaine Horne  
Design: Lynne Whittle and Tiffany Taylor



Department of  
**Parks and Wildlife**



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