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**REVIEW OF RECREATIONAL TAKE
OF CORAL
IN WESTERN AUSTRALIA**

A discussion paper

FISHERIES MANAGEMENT PAPER NO. 163

The Department of Fisheries
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Perth WA 6000

October 2002

ISSN 0819-4327



Review of Recreational Take
of Coral in Western Australia

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1. Map indicating areas of interest for recreational coral collection in WA.

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1. Fish Resources Management Act Order No. 7, 2001.
2. Description of the Phyla and Classes of invertebrates listed within Coral and Related Fish Order No. 7, 2001

INTRODUCTION

This discussion paper has been prepared by the Department of Fisheries (Western Australia) to address the issue of recreational collection of coral in coastal waters of Western Australia. The paper describes:

- popular coral locations in WA;
- management issues associated with the recreational collection of corals;
- management objectives and strategies as possible options to address the issue of recreational collection of corals; and
- seeks public input on the proposed management objectives and strategies.

This paper is not intended to be a technical review, but rather a general discussion paper, which broadly describes potential environmental issues associated with the recreational collection of corals on reef or in marine waters (as opposed to beach wash), and how this activity can be more appropriately managed.

Members of the public are invited to provide written comment on this discussion paper. All issues raised in submissions will be carefully and thoroughly reviewed by staff of the Department of Fisheries. A final policy position on the long term management of recreational coral collection in WA will then be prepared and forwarded to the Minister for Fisheries for final determination.

Your views on how this issue could best be managed are sought by 31st December 2002.

Please forward your suggestions to

**Marine Planner
Department of Fisheries
3rd Floor, SGIO Building
St Georges Terrace
Perth WA 6000.**

If you wish to discuss any aspect of this discussion paper further, please contact Ms Eve Bunbury, Fish and Fish Habitat Protection Program at the Department of Fisheries. Ms Bunbury can be contacted via Telephone: (08) 9482 7397; Facsimile (08) 9482 7389; or email: ebunbury@fish.wa.gov.au.

1. BACKGROUND

This paper is intended to canvass management options for the recreational collection of coral and ‘live rock’, destined for private domestic use in home based aquariums. The commercial collection of coral currently occurs under licence under the *Fish Resources Management Act 1994* (FRM Act). At present, five individuals are permitted to collect limited amounts of coral for commercial gain, known as a ‘Marine Aquarium Fishing’ (MAF) Licence, anywhere along the coast in WA.

Corals, fish, and a vast array of small and microscopic marine animals and plants live on near-shore reef platforms along the Western Australian coastline. Some of these plants and animals such as algae and small invertebrates attach themselves to the rocky reef substrate. Where these rocks have been colonised by marine fauna, they are referred to as ‘live rock’.

Corals generally function at the lower levels of the marine food chain and form communities that are a critical biophysical component within the marine ecosystem where they occur.

Animals such as corals create microhabitats, which are used by other animals at specific stages of their life cycle, while algae and invertebrates provide important food sources for molluscs and the larvae and juveniles of a large number of other marine species.

Corals are vulnerable to a number of external environmental factors including land-based activities such as sediment loads from river discharge, a deterioration of water quality near coastal developments through an increase in nutrient loads, as well as global warming, storm damage and predation by the sea star *Acanthaster planci* and snail *Drupella cornus*, both of which have caused extensive coral mortality.

Increasing numbers of people recreate along the coast, and enjoy the variety of marine life living in the near-shore marine environment, in particular reef areas. These areas attract non-extractive forms of recreation, including swimming, diving, and snorkelling, as well as more extractive pursuits, including collecting pieces of coral and ‘live rock’, which can easily be transported to home-based aquariums.

Map 1 indicates the location of coral reef areas in the near-shore marine environment along the WA coast. Areas, which, because of their ease of access from land, are particularly popular to both tourists and coral collectors. These areas are primarily in the Gascoyne and Pilbara regions of the State.

1.1 Recreational coral collection

Until a prohibition Order was implemented in July 2001, there was no specific legislative control over the recreational (non-commercial) collection of coral by members of the public, except within some zones within declared marine reserves, or Reef Observation

Areas, and some areas within Fish Habitat Protection Areas, both of which are declared under the *Fish Resources Management Act 1994*.

1.2 Management issues

The collection of coral on reef or in marine waters can be a source of conflict between beach users. It is this Department's experience that people generally feel a strong degree of 'custodianship' for coral reefs areas, and to see pieces of coral taken from the reef can become an emotional issue, particularly when relatively large quantities are taken.

Increasing interaction between user groups and the take of relatively large quantities of coral by some individuals who claim to be collecting for domestic use, has resulted in accelerating conflict at a number of coastal locations.

In May 1999 a discussion paper on the management of recreational fishing in the Gascoyne bioregion of WA raised the issue of coral collection. The community-based working group, which compiled this discussion paper proposed a range of changes to recreational fishing bag limits, including a prohibition on the recreational collection of coral (and live rock) due to their ecological importance and the difficulty in managing the amounts taken. Of the 753 submissions received as part of this Review, most were supportive of changes to recreational catch limits, however few specific comments were made on the take of coral and no objections were raised (DoF, 2001b). A similar proposal for the west coast bioregion, which proposed a total ban on the recreational collection of coral (DoF, 2001a), also received no objections from public submissions.

These consultation processes focused on the management of recreational fishing in these regions. However, the Department considered that the lack of comment in public submissions with respect to coral collection indicated that a broader consultative approach, which specifically targeted stakeholders with a specific interest in corals, was needed to establish long-term management arrangements for the recreational collection of coral in the State.

1.3 Prohibition Order

Following the Gascoyne and West Coast recreational fishing reviews, and significant community concern about the collection of coral from areas near Quobba in the Gascoyne Region, the Minister for Fisheries imposed a prohibition Order (Ministerial Order No. 7) in July 2001 on the take of fish (coral and related fish) under the provisions of the *Fish Resources Management Act 1994 (FRMA)*, for an indefinite period of time. A copy of the Order is included as Appendix 1.

The Order will remain until such time as a review on the recreational collection of coral in WA has been completed and a policy position on the recreational take of coral has been finalised to the satisfaction of the Minister for Fisheries. This discussion paper forms the basis of the consultation phase of this review. The Order can then be amended to reflect the policy position if necessary.

The Order lists a number of species of corals and marine fauna, which inhabit rocky reef substrate and are commonly targeted by recreational collectors for domestic aquariums. An interpretation of the animals listed within the Order is included in Appendix 2.

The Order does not explicitly prohibit the collection of reef substrate (rock), as this falls under the jurisdiction of the *Offshore Minerals (Consequential Amendments) Act 2001*. However, the inclusion of benthic marine fauna known to colonise the rock effectively means that collection of rock, upon which the plants and animals live ('live rock'), is also prohibited.

Currently, penalties on a breach of this Order may be imposed in accordance with s.52 of the *FRMA*. This means that the maximum penalty of \$1,000 will apply, with additional penalties determined in accordance with the quantity of coral taken, on a piece basis.

This review will focus on the recreational take of coral and 'live rock' on reef or in marine waters (as opposed to beach wash), destined for private domestic use in home based aquariums.

2. PROCESS FOR REVIEW

The increasing level of conflict between user groups, the collection of relatively large amounts of coral by some individuals who claim to be collecting for domestic use, and the ecological importance and vulnerability of corals, has resulted in a decision by the Department of Fisheries to review the recreational collection of coral across the State.

As a direct result of Ministerial Order No.7, the Department of Fisheries will develop a policy position for the long-term management of recreational coral collection in WA.

This paper is not intended to be a technical review, but rather a general discussion paper, which broadly describes potential environmental issues associated with the recreational collection of corals.

This review will:

- identify stakeholders involved in the recreational collection of coral;
- broadly identify where coral is collected and why;
- identify social and environmental problems associated with this activity;
- broadly describe management issues associated with the recreational collection of corals;
- outline a number of management objectives and strategies as possible options to address the issue of recreational collection of corals; and
- encourage public input on the proposed management objectives and strategies.

It is anticipated that these management objectives and strategies will form the basis of a policy position for the long-term management of recreational coral collection in WA.

3. RECREATIONAL COLLECTION OF CORAL

3.1 Stakeholders

The majority of West Australians live along the coastal fringe, with concentrations of population at regional centres. A rapidly expanding population, combined with an ever-increasing number of local, interstate, intra-state and international tourists has led to an escalating pressure on the coastal environment. The increase in visitors to the coast has in turn increased activities such as the recreational collection of corals, particularly in areas that are easily accessible from the coast.

Persons associated with the recreational collection of corals include casual beachcombers and amateur marine aquarists. These latter individuals may collect relatively small portions of dead and/or live coral, as well as rocks, which might have small colonies of marine animals such as anenomes, for home aquariums.

On occasion, larger amounts of dead coral and rock are collected, presumably to establish new home-based aquariums.

3.2 What is collected and why

Reef systems are composed of a rocky substrate, upon which the coral communities grow. The base of reef systems is composed primarily of a combination of 'live rock', rubble and sand. This is generated as a result of coral mortality through natural processes such as predation, storm damage and accretion.

No detailed records have been taken regarding what species or quantity of coral is collected by recreational collectors, and it is therefore impossible to generate a definitive list. However, it seems that the type and characteristic of coral (hard or soft for example) collected varies greatly depending upon the intended purpose of the coral.

Live rock

For the purposes of this management paper, 'live rock' is defined as rock, which is impregnated or encrusted with marine organisms. The rock provides a natural habitat for a variety of marine organisms, which can be relatively easily transferred into an aquarium.

Pieces of 'live rock' suitable for use in aquariums range in weight from 0.5 to 10 kg (most commonly approximately 2 kg). The rocks usually have a biological coating, primarily of algae and often have some small encrusting invertebrates such as patches of bryzoans and sponges. This type of rock is very common in many reef habitats including reef flats and at the base of a reef slope (Harriott, 2000).

Live rock is used in aquariums as a natural biological filter mechanism to maintain water quality within marine aquariums. It is understood that up to 2/3 of a home-based aquarium is filled with live rock for this purpose, although this is normally a 'once-off' collection for the establishment of new aquariums as once the rocks are in the tank, they do not need to be replaced.

Decorator rock is a sub-category of live rock, and is a term used to describe rocks covered in the larger (macro) marine organisms such as anemones and sponges, and which have a high commercial value. These are collected primarily because they are attractive to look at, due to the animals which attach themselves to it. It is unlikely that these organisms could survive long out of their natural marine environment unless the collector is experienced.

Animals listed under Ministerial Order No. 7 which are most commonly collected as a result of gathering live rock are sponges, ascidians, worms, very small corals and algae (Nathan Cope, President, Marine Aquarists' Society of WA pers. comm).

Corals

Live hard and soft coral is collected for use in home-based aquariums. Dead hard corals may also be gathered for home collections from the beaches or reefs.

The volume of material collected varies according to the purpose intended. For example, casual beachcombers may merely collect opportunistically according to what is washed up on the beach. This sort of activity is likely to target broken pieces of coral or rock washed up on the beach following storm events, and is unlikely to be of concern.

Marine aquarists with specific interest in particular types of corals and marine organisms are more likely to target specific animals for their aquariums, particularly if they are difficult to obtain from the retail aquarium market. Generally speaking, corals which are collected and grown in home-based aquariums by experienced hobbyists can survive and grow successfully under the right environmental conditions, thereby reducing the need to continuously collect more organisms from the wild.

3.2 Problems associated with this activity

3.2.1 Conflict between user groups

Visitors who access near shore reef areas engage in non-extractive forms of recreation, including swimming, diving, and snorkelling, as well as more extractive pursuits including collecting pieces of coral and live rock. The collection of corals and live rock at the same time and place as non-extractive pursuits is a source of potential conflict, whether real or perceived, especially when significant quantities are collected.

Individual visitors, and more often locals to the area, feel a strong degree of 'custodianship' for these areas. To see pieces of coral or live rock taken from the reef can

invoke an extremely emotional response, particularly where significant quantities are taken and where there is no legislation to limit the quantity taken.

This conflict in uses has escalated to serious levels in the Gascoyne Region of WA, and it has become necessary to review the situation in an objective manner, which takes into careful consideration the needs and expectations of all user groups.

3.3.2. Ecologically sustainable collection

Corals spawn annually, when vast quantities of eggs and sperm are released and fertilised in the water column to form small larvae called planulae. Some corals also release free-swimming larvae. The release of larvae into the water column allows for broad dispersal, which in WA is aided by the warm Leeuwin Current. The Leeuwin Current runs parallel to the coast, and provides annual replenishment of colonies from nearby reef systems. Corals can also reproduce by regrowing from the intact base if part of the colony is left after accidental breakage or harvesting.

Some groups of coral such as *Acropora* are naturally vulnerable to storm damage and have the capacity to regenerate relatively readily. These species can therefore sustain some recreational harvest. However, some species of coral are very slow growing and should not be harvested.

The recreational collection of coral by the average individual does not characteristically involve removal of large quantities. However, in some locations individuals have been observed taking significantly large (up to a trailer load) amounts, which could potentially lead to the localised depletion of some types of coral. It seems unlikely that this quantity of coral could be kept alive using amateur equipment for long, or accommodated in small home-based aquariums. Collection on this scale has led to speculation that these individuals are quasi-commercial collectors, and this level of collection cannot be considered as 'recreational take'.

The Department of Fisheries acknowledges that associations such as The Marine Aquarists' Society of WA actively strive to promote environmentally sustainable collection practises and promote a greater understanding of marine creatures and their habitats. It is understood that hobbyists in such associations have very well developed techniques, which are highly successful in growing corals, and provide a valuable role in educating the general public of the value and importance of coral.

3.3.3. Protection of vulnerable areas

Near-shore reef platforms, which are subject to high numbers of visitors, may be considered to be vulnerable to human disturbance. Incidental damage to reefs from boat hulls and anchors, diver damage and water pollutants such as oil or fuel spillage, may also affect the overall health of a reef system. Contaminated groundwater originating from untreated sewage from toilet blocks near the coast are also known to have localised

effects on coral communities, which may in turn affect the overall health of the reef ecosystem.

Where these impacts are known to exist and have the potential to damage a reef system, the collection of corals and live rock should be reviewed carefully so that additional pressure is not placed on an already stressed ecosystem.

4. MANAGEMENT

The practise of recreational collection of coral needs to be managed to reduce public conflict at near shore reef areas, and to protect vulnerable coral areas from over-exploitation through recreational coral collection in the future.

4.1 Objectives

The Department of Fisheries has adopted the following management objectives in relation to the recreational collection of coral:

- to restrict the indiscriminate recreational collection of live coral from marine waters; and
- to permit coral collection for non-commercial gain by individuals with a genuine interest in the marine environment.

4.2 Strategies

A key role of fisheries management is to ensure that fish stocks are sustainable, and to incorporate the concept of resource sharing (DoF, 2000). This can be achieved through:

- public education campaigns, which raise public awareness of the need to behave in an environmentally responsible manner; and
- administrative arrangement, such as regulations under the *FRMA*. These legislative instruments have the ability to legally impose temporal and spatial controls, as well as control quantities of fish take, associated with fishing activity in specified areas.

Both the above options are available in the case of management of recreational coral collection.

A range of possible management strategies have been identified, and listed below. The obvious advantages and disadvantages of each strategy are also identified.

Comment on these management strategies is invited.

4.2.1 Public Education

Promote public education and awareness of issues associated with recreational take of coral and live rock. The strategy would reiterate the need to protect the marine environment, promote sustainable collection practices, and respect the views of other beach users

Public education would aim to increase public awareness of the sensitivity of corals and other marine organisms to over exploitation, and the need to protect them from incidental damage as well as collection.

This is a non-administrative management option, which is consistent with the management directions identified by the Department of Fisheries for recreational fishing in WA. However it would need to be on going, and accordingly have associated on-going costs.

4.2.2 Administrative arrangement

The following options could be enforced through regulations under the *FRMA*:

Complete closure to recreational collection

- Prohibit recreational collection throughout the State.

A complete prohibition of recreational coral collection would effectively address issues associated with recreational collection, in particular the quasi-commercial collectors. However, this option may be seen to unnecessarily constrain those individuals with a genuine hobby interest in corals. It could also raise compliance issues, where a person is found in possession of coral, which could be difficult and expensive to control.

- Permit genuine coral collection by experienced hobbyists through a recreational coral collectors licence, under the *FRMA*.

A recreational collecting licence is a new concept, which is not currently available, and is likely to incur some expense to a potential collector. This option could also raise compliance issues, which could be difficult and expensive to control.

Spatial closures

Spatial closures could include one or more of the following options:

- Prohibit collection south of Perth. (32 degree parallel of latitude)

Advice received by the Department of Fisheries from the WA Museum indicates that the highest incidence of coral collection occurs north of Perth. It is understood that the range and quantity of hard corals south of Perth (32 degree parallel of latitude) is generally significantly lower, with the exception of discrete areas, which are subject to the influence of the warm Leeuwin Current.

This option would protect corals and marine organisms in the cooler waters south of Perth, where recreational collection is known to be low. However, this option would effectively restrict recreational collection to warm water corals. It may also impact on collectors who have logistical difficulty travelling further north.

- Prohibit collection in the vicinity of reef areas known to be popular recreation sites to minimise user conflict.

This option would reduce the level of conflict currently being experienced in easily accessible near-shore reef areas, which are popular tourist destinations, such as those areas identified in Figure 1.

This option may increase recreational pressure on other less popular near-shore reef areas, leading to local depletion. It could also contribute to damage of the coastal zone by vehicles travelling to sites, which are presently unused and may not have properly controlled vehicle access routes.

- Prohibit the collection from reef platforms accessible from the beach.

This option would reduce the potential for user conflict in vulnerable near shore reef areas along the coast, but would still permit collection from off shore reef areas accessible by boat.

This would effectively restrict collection to individuals who have access to boats, and may also raise compliance issues and associated costs.

- Restrict collection to clearly defined areas.

This option would reduce the potential for conflict in near shore areas, which are presently popular tourist destinations, and could effectively direct collectors to areas where vehicle access is already managed, or can more easily be managed. Specified areas where recreational coral collection is permitted could be 'rotated', and so reduce collection pressure on particular areas. This option would create compliance issues and associated costs.

Temporal closures

- Restrict collection to particular times of the year, so as to avoid peak holiday periods and minimise potential user conflict.

This option would reduce conflict between user groups during peak holiday periods. However, increasing numbers of tourists who are not necessarily restricted to traditional

holiday periods constantly visit these sites throughout the year. This option would also not address increasing user-pressure as a result of collection on vulnerable near shore reef areas.

Quantities

- Restrict recreational collection of coral to a specific set possession limit, or bag limit, per person (unless given written permission by the Executive Director, Department of Fisheries through a recreational coral collection licence).

This option would still allow for recreational collection, but would effectively restrict quantities to specific amounts. This option requires significant compliance and enforcement measures throughout the State.

5. WHERE TO FROM HERE?

The advice and assistance of the following agencies and groups has been sought during the preparation of this discussion paper. Their suggestions and assistance is greatly appreciated.

WA Museum
Marine Aquarists' Society of WA
Department of Conservation and Land Management
Marine Parks and Reserves Authority.

Public comment is sought on the management options identified above. Views on future monitoring and management of this issue are also invited.

Please provide your views on these options, or any others you consider worthy of consideration, to the Department of Fisheries by 31st December 2002.

Please forward your suggestions to:

**Marine Planner
Department of Fisheries
3 rd Floor, SGIO Building
St Georges Terrace
Perth WA 6000.**

If you wish to discuss any issues identified within this Option Paper further prior to forwarding your submission, please contact Ms Eve Bunbury, Fish and Fish Habitat Protection Program at the Department of Fisheries via:

Telephone No :(08) 9482 7397;

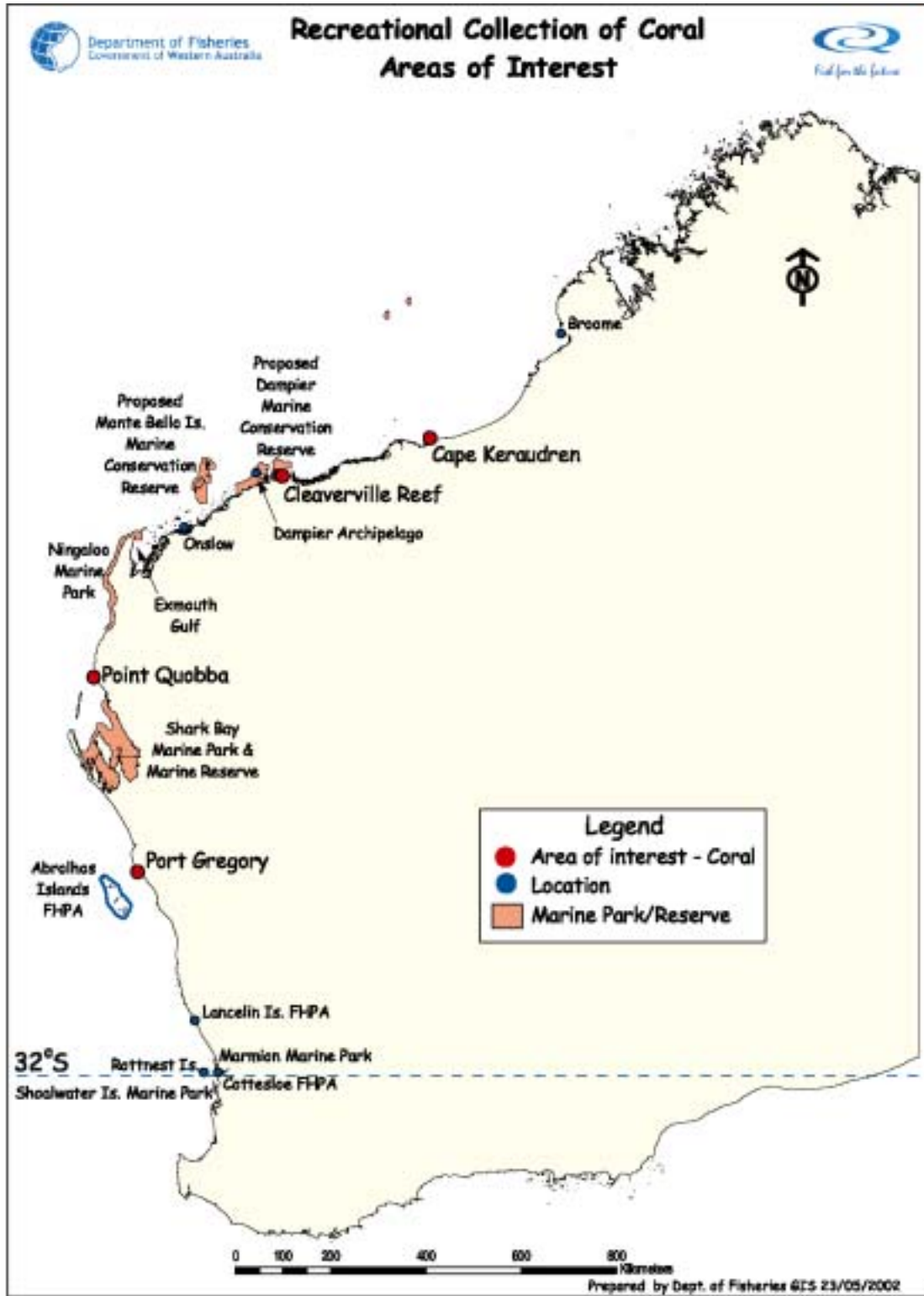
Facsimile (08) 9482 7389; or
email: ebunbury@fish.wa.gov.au.

Issues raised within all the submissions received by the Department of Fisheries will be carefully reviewed and taken into consideration prior to the preparation of the long-term management strategy for recreational coral collection in WA.

6. REFERENCES

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FIGURE 1 – Map indicating areas of interest for recreational coral collection in WA.



APPENDIX ONE – Fish Resources Management Act Order No. 7, 2001

FISH RESOURCES MANAGEMENT ACT 1994
PROHIBITION ON TAKING FISH (CORAL AND RELATED FISH) ORDER
2001
Order No. 7 of 2001

FD 1620/98 [427]

Made by the Minister under section 43.

Citation

1. This order may be cited as the *Prohibition on Taking Fish (Coral and Related Fish) Order 2001*.

Interpretation

2. In this order “coral and related fish” means any fish of the scientific classification—

(a) Class—

Anthozoa;
Hydrozoa;
Polychaeta;
Crinoidea;
Ascidiacea;

and

(b) Phylum—

Bryozoa;
Porifera.

Prohibition on taking coral and related fish

3. A person must not take for any purpose, other than a commercial purpose in accordance with an authorization, any coral or related fish.

Dated this 2nd day of July 2001.

KIM CHANCE, Minister for Forestry and Fisheries.

APPENDIX TWO : A description of the Phyla and Classes of invertebrates listed within the Coral and Related Fish Order (No. 7, 2001)

Phylum	Class	Subclass	Order	Genus	DESCRIPTION
Chordata	Ascidiacea				Sea squirts
Coelenterata	Anthozoa	Octocorallia (or Alcyonaria)	Helioporacea	Heliopora coerulea	Blue coral - blue – green underwater but skeleton permanently blue
			Alcyonacea		All soft corals and sea fans.
			Pennatulacea		Sea Pens – live in soft bottom habitats and often completely withdraw into the substrate during daylight
		Hexacorallia (or Zoantharia)	Actiniaria		Simple sea anenomes
			Zoanthidia		Colonial sea anenomes
			Corallimorpharia		Mushroom anenomes
			Scleractinia		True stony corals with hard skeletons of all shapes (encrusting, lobed, rounded, plate or branched)
		Ceriantipatharia	Antipatharia		Black and wire corals
			Ceriantharia		Tube anemones
	Hydrozoa		Hydroidea		Hydroida – stinging feathery animals related to jellyfish
			Milleporina	Millepora	Fire coral – may form extensive outcrops where currents strong, hollow cores and branches easily broken
			Stylasterina	Distichopora	Ornate lace corals which branch in one plane – common in cervices, under ledges – variety of colour
				Stylaster	Also branches in one plane; branches are fine, tapered, and delicate
Annelida	Polychaeta				Bristle worms – segmented ornate worms living in tubes on coral reefs
Echinodermata`	Crinoidea				Feather stars – plankton feeding multi-armed echinoderms, sea stars, sea urchins, sea cucumber
Ectoprocta					Bryozoa moss animals – primary colonisers of rock, s
Porifera					Sponges

FISHERIES MANAGEMENT PAPERS

- No. 1** The Report of the Southern Western Australian Shark Working Group. Chairman P. Millington (1986).
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- No. 3** Management Measures for the Shark Bay Snapper 1987 Season. P. Millington (1986).
- No. 4** The Esperance Rock Lobster Working Group. Chairman A. Pallot (1986).
- No. 5** The Windy Harbour - Augusta Rock Lobster Working Group. Interim Report by the Chairman A. Pallot (1986).
- No. 6** The King George Sound Purse Seine Fishery Working Group. Chairman R. Brown (1986).
- No. 7** Management Measures for the Cockburn Sound Mussel Fishery. H. Brayford (1986).
- No. 8** Report of the Rock Lobster Industry Advisory meeting of 27 January 1987. Chairman B. Bowen (1987).
- No. 9** Western Rock Lobster Industry Compensation Study. Arthur Young Services (1987).
- No. 10** Further Options for Management of the Shark Bay Snapper Fishery. P. Millington (1987).
- No. 11** The Shark Bay Scallop Fishery. L. Joll (1987).
- No. 12** Report of the Rock Lobster Industry Advisory Committee to the Hon Minister for Fisheries 24 September 1987. (1987)
- No. 13** A Development Plan for the South Coast Inshore Trawl Fishery. (1987)
- No. 14** Draft Management Plan for the Perth Metropolitan Purse Seine Fishery. P. Millington (1987).
- No. 15** Draft management plan, Control of barramundi gillnet fishing in the Kimberley. R. S. Brown (1988).
- No. 16** The South West Trawl Fishery Draft Management Plan. P. Millington (1988).
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- No. 26** A report on marron fishing in Western Australia. Chairman Doug Wenn MLC (1989).
- No. 27** A review of the Shark Bay pearling industry. Dr D.A. Hancock, (1989).
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- No. 29** Distribution and marketing of Western Australian rock lobster. P. Monaghan (1989).
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- No. 31** Rock Lobster Industry Advisory Committee report to the Hon Minister for Fisheries September 1989. (1989)
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- No. 33** Guidelines for by-laws for those Abrolhos Islands set aside for fisheries purposes. N. Moore (1989).
- No. 34** The future for recreational fishing - issues for community discussion. Recreational Fishing Advisory Committee (1990).
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