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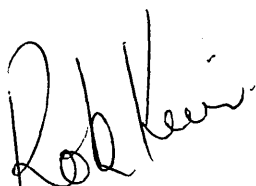
## CABINET COVER SHEET

1. **TITLE** PROTECTION OF THE WHITE SHARK-  
REGULATIONS UNDER THE *FISHERIES ACT*  
1982 AND THE *NATIONAL PARKS AND*  
*WILDLIFE ACT 1972*
2. **MINISTERS** HON DAVID WOTTON MP  
MINISTER FOR THE ENVIRONMENT AND  
NATURAL RESOURCES.  
HON ROB KERIN MP  
MINISTER FOR PRIMARY INDUSTRIES.
3. **PURPOSE** To provide for the total protection of the white  
shark and to effect the management of the cage  
viewing charter industry.
4. **RESOURCES REQUIRED  
FOR IMPLEMENTATION** No cost implications to government  
No effect on government staffing.
5. **RELATIONSHIP TO  
GOVERNMENT POLICY** The proposal is consistent with government  
policy that the State's fisheries resources and  
habitat are managed on a sustainable basis.
6. **CONSULTATION** Public consultation took place with the issue of a  
discussion paper and releases in the media.
7. **FAMILY IMPACT STATEMENT** Not applicable.
8. **URGENCY** Not applicable.

## 9. RECOMMENDATIONS

It is recommended that Cabinet approve -

- 4.1 The drafting of regulations to amend the *Fisheries (General) Regulations 1984* as follows -
- 4.1.1 to proclaim the white shark (*Carcharodon carcharias*) a protected species under regulation 6, prohibiting the capture, holding or killing of this species;
- 4.1.2 to amend regulation 35C to:
- (a) prohibit the use of blood, bone, meat, offal or skin of an animal (other than in a rock lobster pot or fish trap) within two nautical miles of the mainland of the State or all islands and reefs of the State which are exposed at low water mark; and
  - (b) prohibit the depositing of or use of a mammal or any product of a mammal in all marine waters of South Australia;
- 4.1.3 to prohibit the use of wire trace with a gauge of 2mm or greater, in conjunction with fishing hooks greater than size 12/0, in all waters of South Australia. Penalty - a fine not exceeding \$500, expiation \$100.
- 4.2 The drafting of regulations to amend the *National Parks and Wildlife Act 1972* to extend the boundaries of the Sir Joseph Banks Group Conservation Park, Neptune Islands Conservation Park and The Pages Conservation Park to include the waters within 2 nautical miles of the low water mark of these islands.
- 4.3 The provision of exemptions to the berleying restrictions be provided to approved cage viewing operators pursuant to the *National Parks and Wildlife Act 1972* and subject to conditions established by PISA Fisheries and the Department of the Environment and Natural Resources.



Hon Rob Kerin MP  
MINISTER FOR PRIMARY INDUSTRIES

DATE 7/4/97



Hon David Wotton MP  
MINISTER FOR THE ENVIRONMENT  
AND NATURAL RESOURCES

DATE: 11/4/97

**TO: THE PREMIER FOR CABINET**

**RE: PROTECTION OF THE WHITE SHARK- REGULATIONS UNDER THE FISHERIES ACT 1982 AND THE NATIONAL PARKS AND WILDLIFE ACT 1972**

**1. PROPOSAL**

1.1 That Cabinet endorse the drafting of regulations to provide for the total protection of the white shark and to effect the management of the cage viewing charter industry.

**2. BACKGROUND**

2.1 In May 1995, a discussion paper on the management of the white shark in South Australia was released for public comment. This report is appended as Attachment 1. The report detailed six proposals for public discussion which were designed to:

1. Restrict the activity of berleying specifically for attracting large sharks around all coastal areas, islands and reefs;
2. prohibit the capture, holding and killing of the white shark;
3. prohibit the use of large hooks and heavy gauge fishing trace to prevent the capture of large sharks;
4. introduce a limited entry licensing system for the shark cage viewing industry in South Australia; and
5. establish a strategic research program for investigation of the white shark.

2.2 Opportunities for public comment and submission to this paper ended in July 1995. A total of 73 submissions were received with approximately one-half from game fishing associations and recreational anglers with some affiliation with a game fishing club. Submissions were also received from conservation groups and members, scientists associated with research into the white shark and from charter boat operators (including game fishing and cage viewing charters). Responses were received from South Africa, United States, United Kingdom and New Zealand and represented the views of specialist researchers, the Shark Specialist Group of the International Union for the Conservation of Nature (IUCN) and the International Game Fishing Association.

- 2.3 A supplementary report (Attachment 2) has been prepared which summarises the views and opinions expressed in the submissions, and reviews all proposals for the management of the white shark as presented in the discussion paper of May 1995.

### 3. DISCUSSION

- 3.1 The reports and recommendations have been prepared in consultation with officers of the Department of the Environment and Natural Resources and Primary Industries SA. The principal basis for protecting the white shark is the vulnerable, if uncertain, status of the shark, the importance of the white shark as the apex predator in the ocean, and the associated risk of "ecological extinction". Adoption of the precautionary principle is urged by supporters of a prohibition. This means that where there are any risks of irreversible over-exploitation, lack of scientific evidence should not be used as a reason for not taking positive management action.
- 3.2 Principal opposition to the initiative to declaring the white shark a protected species came from the game fishing associations and members. They argue that their activities have very little impact on the white shark and that more effort should be directed at minimising or preventing the by-catch and killing of the white shark by commercial fishing operators.
- 3.3 Research and monitoring is continuing in the development of by-catch reducing devices and fishing methods in response to increasing pressures on fisheries to comply with environmental requirements.
- 3.4 A national meeting on white sharks was held in Sydney in September 1996. This meeting endorsed initiatives for greater conservation of the white shark and nominated a research working group to develop a research strategy to learn more about the abundance and biology of this species and to reduce the major causes of white shark mortality.
- 3.5 The white shark is protected in South Africa, Florida, California, Namibia, Maldives and recently in Tasmania, New South Wales and Queensland. The Australian Fisheries Management Authority is also understood to be moving towards securing a ban on the taking of this species in Commonwealth waters. The Australian Seafood Industry Council, the peak body representing Australian commercial fisheries, has publicly supported all initiatives to protect the white shark.
- 3.6 A letter to the Australian Nature Conservation Agency from the Director of Fisheries in response to the public nomination of the white shark under the Endangered Species Act is appended as Attachment 3. The basis for the protection of the white shark is not necessarily driven by the belief that this species is facing imminent extinction, but because of its position in the marine eco-system as the top order predator and that the deliberate targeting of white shark for the pure pleasure of capture or killing is no longer acceptable with community values and beliefs.

### 3.7 Consultation

Public consultation took place with the release of a discussion paper in May 1995 and releases in the media. This initiative to protect the white shark in South Australia has received international recognition and response. An example of this is a letter received from Professor David Bellamy of the Marine Conservation Society (attachment 4).

### 3.8 Sub Committee Discussion

- 3.8.1 The Environment and Natural Resources Cabinet Committee discussed the proposed regulations to protect the white shark and manage the cage viewing industry in June 1996. The committee agreed that the proposals should be re-submitted to Cabinet without change. Clarification was sought, however, on the practical implication of the ban on game fishing.
- 3.8.2 The proposed regulations will prevent the targeted fishing for white sharks, specifically through restrictions on berleying, terminal tackle and the prohibition on capture, holding or killing of the white shark. This will not impact on the ability of game fishers to fish for other shark species such as bronze whaler and hammerhead, which are more common across a wider range and can be easily taken on hook sizes smaller than 12/0 and wire traces smaller than 2mm in diameter. It is unlikely that white sharks will be captured by accident using permitted gear. Should this occur, sharks could be released by cutting the wire trace as close to the shark as possible.
- 3.8.3 The proposed regulations will impact on a relatively small number of big game fishers in South Australia, including charter operators. Most business associated with the charter boat industry and the white shark in particular, involve cage viewing activities. These operators support the proposed restrictions.
- 3.8.4 Although big game fishers land very few sharks in South Australia each year (less than five), a larger number are tagged and released with an unknown mortality rate. Considerable effort and money is expended by game boat operators in pursuit of these fish and the impact on these operators will clearly be significant. However, it is anticipated that game fishers will have the opportunity to participate in research programs and will be provided exemptions to catch, tag and release white sharks to assist in assessing the abundance and movement patterns of the white shark. This provision will be subject to the approval of a code of practice in fishing for white shark to be developed by the Game Fishing Association of Australia.

3.8.5 Similarly, approved charter operators will be permitted to use berley to attract white shark for cage viewing purposes and will also be participating in research activities. An extension of the boundaries of a number of conservation parks is required to allow the management of the cage viewing operations to come under the jurisdiction of the Department of the Environment and Natural Resources.

3.8.6 Despite the white shark being a non-permitted commercial species in South Australia, there are reports that they are continuing to be killed, both deliberately and accidentally, during commercial fishing operations. Proposed research will address the issue of accidental capture and mortality, however a prohibition on the deliberate killing of the white shark is necessary to ensure its long term survival.

### 3.9 Cost

No direct cost implications to government. The cost of publicity will be met from existing allocations.

### 3.10 Staffing

No effect on existing staffing levels. Compliance will be undertaken by existing staff.

## 4. RECOMMENDATIONS

It is recommended that Cabinet approve -

4.1 The drafting of regulations to amend the *Fisheries (General) Regulations 1984* as follows -

4.1.1 to proclaim the white shark (*Carcharodon carcharias*) a protected species under regulation 6, prohibiting the capture, holding or killing of this species;

4.1.2 to amend regulation 35C to:

(a) prohibit the use of blood, bone, meat, offal or skin of an animal (other than in a rock lobster pot or fish trap) within two nautical miles of the mainland of the State or all islands and reefs of the State which are exposed at low water mark; and

(b) prohibit the depositing of or use of a mammal or any product of a mammal in all marine waters of South Australia;

4.1.3 to prohibit the use of wire trace with a gauge of 2mm or greater, in conjunction with fishing hooks greater than size 12/0, in all waters of South Australia. Penalty - a fine not exceeding \$500, expiation \$100.

- 4.2 The drafting of regulations to amend the *National Parks and Wildlife Act 1972* to extend the boundaries of the Sir Joseph Banks Group Conservation Park, Neptune Islands Conservation Park and The Pages Conservation Park to include the waters within 2 nautical miles of the low water mark of these islands.
- 4.3 The provision of exemptions to the berleying restrictions be provided to approved cage viewing operators pursuant to the *National Parks and Wildlife Act 1972* and subject to conditions established by PISA Fisheries and the Department of the Environment and Natural Resources.

*Rob Kerin*

Hon Rob Kerin MP  
 MINISTER FOR PRIMARY INDUSTRIES

DATE 2/4/97

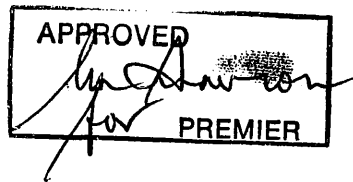
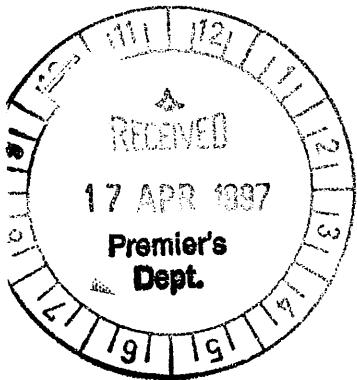
*David Wotton*

Hon David Wotton MP  
 MINISTER FOR THE ENVIRONMENT  
 AND NATURAL RESOURCES

DATE: 11/4/97.

***In Cabinet***

28 APR 1997





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**SOUTH AUSTRALIAN  
FISHERIES MANAGEMENT SERIES**

**PAPER No. 6**

**MANAGEMENT OF  
THE WHITE SHARK  
IN SOUTH AUSTRALIA**

*A discussion paper  
by*

*Jon Presser, PISA Fisheries  
Ross Allen, Department of Environment and Natural Resources*

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## 1. INTRODUCTION

The white shark (*Carcharodon carcharias*) is a creature that generates mixed emotions and attitudes. While it can be a costly menace and life threatening to commercial fishing and marine recreational activities, there are some who seek interaction with it. It provides a formidable opponent in game fishing and a creature of awe for observation.

Despite all the attention the white shark receives, it remains one of the least well known of any of the world's large sharks (Bruce 1992).

The accessibility of white sharks is high in South Australia compared to other regions worldwide. This presents a valuable resource but can on occasions produce conflict that may compromise the safety of other users and the interests of other groups.

Demands for greater controls and management of white shark related activities have arisen over the last ten years or so, stimulated by speculation regarding the status of white shark populations, effects of berleying (around seal colonies, offshore islands and in the vicinity of other water users), as well as sport fishing and aquaculture operations.

In a joint press release on 22 December 1994, the Minister for Primary Industries and the Minister for Environment and Natural Resources acknowledged that there was a need to provide greater protection for the white shark, and requested the development of recommendations on research and management of activities related to the shark.

This paper has been prepared as a discussion document for public consultation and response. It presents a summary of the little that is known on white shark biology, a description of both recreational and commercial interactions with white shark (including current regulations and controls pertaining to these activities) and a presentation of the proposals for greater protection of the shark and management of related activities.

Submissions and written responses relating to the management proposals of the white shark will be accepted up to Friday 28 July 1995, and should be addressed to:

White Shark Management  
PISA-Fisheries  
GPO Box 1625  
ADELAIDE SA 5001

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## 2. SHARK BIOLOGY AND ASSOCIATED OBSERVATIONS

In 1989, the Threatened Fishes Sub-Committee of the Australian Society of Fish Biology appended *C. carcharias* to the Australian Threatened Fishes List in the "uncertain status" category. While the committee suspected that white sharks had suffered a sufficient reduction in numbers or distribution, they considered there were insufficient data to adequately estimate the species' population size or to assess human impact upon it (Strong *et al* 1992). There are currently no reliable scientific estimations of abundance of white shark.

Recently, there appears to be conflicting anecdotal observations on the population status and abundance of the white shark. Some information suggests that the population has undergone serious decline. This is often based on the reduction in the frequency of sightings at previously renown "hotspots" (Dangerous Reef, Neptune Islands). These claims, however, are balanced to some extent by sightings at other localities and opinions from people such as game fishing charter operators, that the concerns over the white shark populations are not warranted.

The decline in sighting frequency may be more related to changes in the distribution or behaviour of the white shark in the area rather than related to population variation. Interpretations of sightings at particular localities must take into account the interannual, seasonal and even daily changes in movement patterns that occur for reasons that are not fully understood.

Game fishing captures off south eastern Australia between 1961 to 1990 were analysed by Dr Julian Pepperell (1992). He found that the ratio of white sharks to all species caught changed from 1:22 in the 1960s to 1:38 in the 1970s to 1:651 in the 1980s. He concluded that the marked change from a relatively healthy ratio of white sharks in the 1960s to their virtual disappearance from the catch of gamefish anglers in the 1980s gives cause for concern regarding the status of that species.

In South Australia, there has been a decline in the number of reported white shark deaths from game fishing activities from around 25 white sharks per year in the 1950s to a 10 year average (to 1990) of 1.4 sharks per year. To some extent, this is explained by the reduced fishing effort from this group. It is estimated that total captures by recreational fishers in South Australia is probably less than 10 per year. Commercial captures of white shark are usually not recorded, and in many cases are largely incidental. Anecdotal information indicates that commercial captures, or white shark deaths from entanglement in fishing gear, are quite significant.

The most extensive studies to date on the distribution and biology of the white shark in South Australian waters were made by Bruce (1992) on the basis of 217 records of white shark capture, and Strong *et al* (1992) from studies during four expeditions to Spencer Gulf, South Australia, by The Cousteau Society in 1990 and 1991.

While these studies were not able to provide any reliable estimation of the population status of the white shark, Strong *et al* (1992) suggested the white sharks in the Spencer Gulf area constitute a local population and are especially vulnerable to over-exploitation. Their

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vulnerability is increased due to such factors as the observed tendency of white shark to segregate by sex, that they do not reproduce until they are greater than 4.0 to 4.5 metres in length, produce few offspring, and have an observed relatively high degree of site attachment.

One shark, tagged at Dangerous Reef in 1990, was subsequently resighted on 25 different occasions over the following three years at the same place it was tagged. There are, however, a number of white sharks that are not resighted after tagging. This would suggest that, as well as resident sharks, there are those sharks that take in a particular locality as part of a larger home pattern.

The year round presence of white sharks in South Australia, and in particular, the frequent resighting of individuals, suggests that a percentage of the white shark population remains in local waters.

Data on growth rates and ageing are limited. It is estimated from research studies in California that white sharks mature at about 10 to 12 years of age and that a 5 metre animal is about 14 to 16 years old. The maximum age has not been determined. They can reach lengths of 6 to 7 metres and weigh in excess of 2 tonnes.

The white shark produce small numbers (9-11) of well developed young that have a low natural mortality. The gestation period is between 9 to 12 months, and births generally occur during summer or autumn. The high incidence of capture of small white shark in the Great Australian Bight and in the northern reaches of both Gulfs in South Australia suggests that these areas may be important reproduction or nursery habitats.

The diet of large white sharks (> 4m) consists mainly of seals, dolphins and the carcasses of dead whales. This has been determined from analysis of stomach contents of captured sharks (Bruce 1992). Seals have been assumed to be a major prey item of white sharks in South Australia based on the frequency of captures and sightings in close proximity to seal colonies.

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### 3. HUMAN/WHITE SHARK INTERACTION

#### 3.1 Shark Attack

Interaction between humans and sharks takes several forms. The most dramatic is the shark attack. Despite the low incidence of fatal or serious attacks from a white shark, we perceive it as very frightening and as one of the worst fears thinkable.

Statistics showing relative frequency of fatal shark attacks against the incidence of death from other life's dangers are often used to counter the emotive speculation. The probability of a shark attack is very remote considering the number of people who use the oceans each year for recreational and professional use.

Shark attacks are likely to continue to be a danger as long as we swim, fish, surf and boat in the marine waters. One way to eliminate the danger, argue some shark hunters in justifying the capture and killing of a white shark, is to eradicate the white shark.

In our everyday pursuits we accept the dangers that we encounter and minimise them as much as possible through due care and precaution. Similarly with sharks, we need to get a better understanding of their behaviour and reduce the risks of unpleasant interaction by modifying our own behaviour of where, when and why we use the sea.

#### 3.2 Commercial Fishing

While a shark attack is not necessarily their fear (apart from abalone divers), some commercial fishers do not welcome the interactions that they may get with the white shark. Sharks do become entangled and damage fishing gear, particularly hauling ropes, fish nets and long lines.

Regulations under the *Fisheries Act 1982* do not permit the taking of white shark for commercial purposes. This prohibition was introduced in September 1994.

While it is recognised that most commercial operators do not deliberately set out to capture white shark, there is a concern that many sharks are being indiscriminately killed, sometimes in revenge for the disruption and damage they cause to the fishing operation. A shark death, in many cases, is unavoidable. Many drown after becoming entangled in fishing gear.

The prohibition on the taking of a shark, even if its death is unavoidable, was introduced to discourage the indiscriminate killing of the white shark by some operators.

Very few records and reports of these encounters are kept and it is difficult to estimate the number of incidental deaths of white shark from commercial fishing except to surmise that it is significant.

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### 3.3 Recreational Fishing

Despite the prohibition on the taking of white sharks by commercial fishing operators, similar restrictions were not introduced for the recreational fisher on the understanding that shark deaths are very remote, and that game fishing clubs do act responsibly in encouraging members to release any white shark caught.

Game fishing is an organised fishing pursuit where club members operate under strict rules and conditions. White shark is one of the many species that are actively sought in club fishing competitions, and a fisher can achieve trophies and seek records from the capture of a white shark. The South Australian Game Fishing Association, founded in 1943, actively encourages its members to "tag" and release all white sharks captured.

There is some dispute over the concept of capture and release, particularly over the effects of hooking and subsequent struggle to get a shark alongside a boat, and with the use of stainless steel trace as part of the fishing gear.

Little is known of the survival rate of individual sharks that are caught and "played" to exhaustion. This activity can take several hours before the shark is brought to the boat, tagged and the line cut, often leaving the hook embedded in the shark and metres of steel trace attached. Game fishers usually use light line to achieve maximum bonus points in fishing competitions and it is not unusual for this line to break during the capture. Sharks have often been observed with embedded hooks and steel trace still attached (R. Fox, personal communication).

It is often argued that the physiology of the shark is such that the exertion during capture is enough to kill them.

Trophy hunters can be described as those fishers who deliberately set out to capture and kill a white shark for its prized jaws or other product or record of the event. South Australia is recognised as an area of the world where the accessibility to white shark is good and the probability of encountering a white shark, if one sets out to do so, is very high. Consequently, it is a destination for trophy hunters around the world, particularly now that this activity is prohibited in California and South Africa.

### 3.4 Cage Viewing

The use of shark proof cages and underwater breathing apparatus to view and film white shark has been developing since the late 1960s. This activity involves the task of attracting sharks to an anchored vessel which tenders a viewing cage suspended over the back or side of the vessel. Divers then enter the cage to view the free swimming shark.

The length of time it takes to attract a shark to the vessel does vary from a few hours to a few days, depending on whether a shark is in the general vicinity of the vessel. An expedition may take as long as 10 days depending on the success of attracting a shark, weather conditions and other activities that can be arranged.

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A number of cage viewing operators have been established in South Australia with most tours being conducted from Port Lincoln. While the numbers of such charter operators have been small in the past, and activities managed more by general agreements and understandings than by regulations, it is apparent more charter operators are interested in similar ventures. It is likely that conflicts will increase, not only between cage viewing operators but also with other commercial, recreational and community interest groups over the activities associated with berleying and cage viewing of white sharks.

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#### 4. BERLEYING TO ATTRACT WHITE SHARK

To attract a white shark to a vessel, either for the purposes to capture it or merely to observe it, berley (or chum), containing fish oil and/or animal product, is used. Varying quantities are released into the water at regular time intervals to develop a slick that will bring a shark which is in the general vicinity, to the vessel where it can be observed, or to a baited hook.

This activity is usually conducted in localities where sharks are commonly encountered and where there is suitable sheltered anchorage. The renown "hotspots" in South Australia are North and South Neptune Islands, Dangerous Reef, English Island, Sibsey Island and The Pages. These locations are associated with breeding colonies of the New Zealand Fur Seal and Australian Sea-lion.

The use of berley to attract white sharks has been criticised for its potential risks to the health and welfare of other users of these regions, and interference with the local marine ecology.

Berleying is perceived as being responsible for attracting and keeping white sharks to an area, thereby increasing the risks of shark attack, and developing patterns of behaviour where the white sharks approach small vessels expecting to be fed. The sheltered bays of the islands not only provide a safe and protected anchorage for shark expeditions, but also for other boating activities associated with diving, fishing, swimming and sailing. Seasonal weather conditions in the lower Spencer Gulf region often restricts the berleying activities to the times of the year when recreational boating and commercial fishing activity is high. It can be expected that, with the increasing purchase of larger and safer recreational boats, more people will be visiting these islands and seal colonies resulting in greater conflict with shark berleying activities.

There is concern of the possible viral or bacterial contamination being introduced to the marine environment generally through the use of berley, with specific concern regarding the potential impact that any contamination may have on colonies of marine mammals. Further, it has been observed that the presence of water craft and activities of humans in close proximity to breeding marine mammals affects their behaviour and clearly disturbs them.

Greater control of all activity in waters adjacent to these areas is required.

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## 5. CURRENT REGULATIONS

In 1988, Regulation 35C, under the *Fisheries (General) Regulations 1984*, prohibited the use of blood, bone, meat, offal or skin of an animal as berley (other than in a rock lobster pot or fish trap) within three kilometres of the mainland of the State, or Kangaroo Island. This was introduced to stop the extensive use of "blood and guts" berley for shark fishing and viewing in areas where it was unsightly and created risks to the safety, health and welfare of other users of the coastline. The practice of fishing from jetties and locations adjacent to areas where swimming, diving and other aquatic activities are pursued was deemed as having unacceptable risks and endangering the lives of others.

Fisheries compliance officers apply discretion to enforce the intent of this regulation, and would not prosecute the handline and rod fisher who uses a little berley while fishing for some of the smaller fish such as garfish, whiting, snapper.

On 1 September 1994, the white shark was removed from the list of species that licensed marine scalefish fishers have access for commercial purposes. Effectively, this prohibits commercial fishers from retaining and selling the white shark, or products of the white shark. However, it does not prohibit the recreational capture, killing or retention of the shark.

Recreational fishing is restricted in some aquatic reserves proclaimed under the *Fisheries Act 1982*, and waters of national parks proclaimed under the *National Parks and Wildlife Act 1972*. The only area where the latter exists is at Dangerous Reef in Spencer Gulf. The waters within a 2 kilometre radius of Dangerous Reef were gazetted in 1989 for the protection and management of the Australian Sea-lion colony on the island after a floating shark observation platform was moored adjacent to the reef. Fishing for shark is prohibited in these waters, and strict conditions apply to permits that are granted for berley for cage viewing purposes.

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## 6. PROPOSED MANAGEMENT ARRANGEMENTS FOR THE WHITE SHARK

In January 1990, the South Australian Department of Fisheries (now Primary Industries SA - Fisheries) released a "green paper" on the marine scalefish fishery that included stock assessments, economic studies and management details for public discussion and response. Although the white shark was not included in the document, subsequent submissions and discussion papers raised it as an important issue for management consideration. In August 1992, the South Australian government approved the management plan for the fishery, that emanated from this review.

The following recommendations, relevant to the white shark and the activities of berleying, were made in the marine scalefish fishery management plan:

### 30 - WHITE POINTER SHARKS AND BERLEYING

- 30.1 *The prohibition on berleying under the South Australian Fisheries Act, relating to the use of blood, bone, meat, offal or skin of an animal (otherwise than in a rock lobster pot or other fish trap) within 3km of the mainland and Kangaroo Island, to be extended to include all of the Gulfs and within 3 kilometres of all islands and reefs of the State which are exposed at low water mark.*
- 30.2 *Berleying utilising fish oils and cereal-based materials to continue to be permitted for light and heavy game fishing purposes, subject to review.*
- 30.3 *White pointer sharks to be removed from the approved species list for South Australian licensed fishers, and the Commonwealth to be approached to apply a similar restriction on Commonwealth licensed fishers.*
- 30.4 *Applications for special exemptions to undertake berleying other than as currently permitted, or to take white pointers for sale, or to sell products from white pointers taken incidentally to other commercial fishing operations, to be considered on the basis of their merit in terms of research, education and overall community value; where the proponents would be responsible for advising groups affected by such activities (eg berleying), including possible advertising in relative newspapers, and may be required to pay a fee for the access.*

Following the release of the white paper and prior to the implementation of the approved management plan (in September 1994), a number of issues relating to the white shark recommendations were discussed. Many of the details related to Recommendation 30 were not able to be finalised in time, and consequently were not included with the revised marine scalefish fishery regulations. Recommendation 30.3, however, was implemented on 1 September 1994.

Some of the points of discussion have been:

- suggested changes to Recommendation 30.1 relating to berleying restrictions;
- proposals for the total protection of the white shark;

- 
- introduction of a limited entry licensing system for white shark cage viewing operators; and
  - promotion of South Australia based research activity in the white shark.

## 6.1 Berleying Restriction

Berley, as defined in the Macquarie Dictionary (1985) is "any bait, as chopped fish or broken bread, or chopped green weed mixed with sand, spread on the water by fishermen to attract fish".

This definition appears to be somewhat limiting, as fishers use many other substances. It is a common practice to use berley when fishing for most species of fish. While many fishers have their "secret recipes" for berley, in most cases it include either fish oil or fish flesh, marine crustaceans, bread or other cereal-based products.

A fisher, who mixes some bread with a little fish oil, minces some small fish or crushes a few mussels and uses it for berley while fishing within 3 kilometres of the mainland or Kangaroo Island is committing an offence under Regulation 35C of the *Fisheries (General) Regulations 1984*.

In the past, the blood and offal of mammals (such as horses) were commonly used as a berley for shark. However, fish meat, oil and offal (particularly tuna) are now more widely accepted and are considered to be a very efficient and effective attractant to the white shark.

While the purpose of Regulation 35C is to stop the "blood and guts" berleying and the jetty-based shark fishing, it does create confusion and difficulty for a fisher who wishes to use some fish-based berley while fishing for other smaller species such as garfish, whiting and snapper. It is proposed that Regulation 35C be amended to prohibit the use of any mammal as berley, but permit small quantities of fish-based berley to be used where it is deemed that the intent of the fisher is not to attract large sharks.

Other amendments proposed for Regulation 35C include altering the range of prohibition from 3 kilometres to 2 nautical miles and extend the prohibition to include all waters within 2 nautical miles of all islands and reefs of the State which are exposed at low water mark. This is necessary to minimise the interference and risks to the health and welfare of the local ecology and other users of the region.

### *Proposal 1*

*That Regulation 35C of the Fisheries (General) Regulations 1984 be amended to prohibit the use of mammal or product of a mammal, or large quantities of fish oil and/or fish product as berley to attract large shark, within two nautical miles of-*

- (a) *the mainland of the State; or*

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- (b) *all islands and reefs of the State which are exposed at low water mark.*

Consideration would be given to providing special exemptions to undertake berleying for approved cage viewing and game fishing activities in areas where the risks of interaction with other users are minimised.

## 6.2 White Shark Protection

The white shark (*Carcharodon carcharias*) has been removed from the prescribed species list of commercial fishers with access to marine scalefish species in South Australia. A prohibition on the recreational capture of white shark has not been introduced to date on the understanding that game fishing clubs act responsibly in terms of continuing to release most white sharks taken. While it is recognised that the resultant mortality of the white shark is minimal, fishing of this nature, involving the prolonged capture and eventual release of the fish, is not condoned. The possible effects on the captured shark of a prolonged struggle (which the sports fishers describes as "playing" the shark) and of embedded and swallowed hooks and wire trace after the shark is released, or has broken the line, is perceived as being undesirable.

It is proposed that a total prohibition on the taking of shark without a permit be introduced in South Australia. Permits would be provided for capture and release and the limited take of white shark for research, education or overall community value.

### *Proposal 2*

*That the white shark (Carcharodon carcharias) be declared a protected species under Section 42 of the Fisheries Act 1982.*

In support of this protection of the white shark, it is proposed that the use of fishing gear deemed to be specifically used to capture large sharks be prohibited in all waters of South Australia.

### *Proposal 3*

*That the use of wire trace with a gauge of 2mm or greater, and fishing hooks greater than size 12/0, be prohibited in all waters of South Australia.*

## 6.3 Licensing of Cage Viewing

An industry, based on the passive use of the shark and which can be classified as "eco-tourism", should be accommodated and promoted. Strict management conditions of this activity should, however, apply to meet the following objectives:

- to prevent the over-exploitation of the shark;
- to prevent unnecessary risks to other water users;

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- to prevent conflicts in a competitive industry; and
  - to minimise the disturbance to breeding colonies of important marine mammals.

To allow this activity to develop within the limitations described, it is proposed that exemptions to the berleying restrictions be granted to approved licensed operators subject to strict conditions.

As many of the recognised shark viewing areas are in waters adjacent to breeding colonies of the Australian Sea-lion and the New Zealand Fur Seal, conditions of the exemptions would need to include consideration of the management of these mammal colonies. While the *Fisheries Act 1982* has provisions for the management of marine mammals, it is considered appropriate that the licensing of shark viewing charters in waters adjacent to these islands be vested with the Department of Environment and Natural Resources (DENR).

#### **Proposal 4**

*That a limited entry licensing scheme for the white shark cage viewing industry be developed under the National Parks and Wildlife Act, 1972.*

To facilitate this management regime, it is proposed that the boundaries of the Sir Joseph Banks Group, Neptune Islands and The Pages conservation parks be extended to within 2 nautical miles of the high water mark of these island reserves. Locations within these areas would need to meet the objectives stated above. These would include Dangerous Reef, North Neptune Island and possibly English Island, Sibsey Island and the Pages. Other locations would only be considered if future development of the industry was warranted and after a review of the impacts of existing operations had occurred.

#### **Proposal 5**

*That the boundaries of the Sir Joseph Banks Islands Conservation Park, Neptune Islands Conservation Park and The Pages Conservation Park be extended under the National Parks and Wildlife Act 1972, to include all waters within 2 nautical miles of the low water mark, to establish better control over access to white sharks. Continued access to these areas is to be provided to all other recreational and commercial fishing activities subject to the provisions of the Fisheries Act 1982.*

DENR proposes to exclude a period of 5 months from berleying and cage viewing activity in waters adjacent to island reserves with Australian Sea-lion colonies to ensure the critical pupping season for the seals is not put at any additional risk from the predation of the white shark.

Australian Sea-lions have a pupping season of approximately 5 months duration and an 18 month breeding cycle. These pupping seasons are not synchronised between colonies. Therefore, DENR will monitor Australian Sea-lion activity at each island reserve. The 5 month exclusion period will commence 8 weeks after the first birth. This 8 week delay will reflect the period before which the first born pups are likely to venture into the water and the exclusion period will enable the last born pups to reach a reasonable stage of development.

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The pupping period will become more predictable with regular monitoring, with DENR being able to give adequate notice of future exclusion periods to allow the industry to plan ahead.

For the remaining period (approximately 13 months) between pupping seasons, DENR will restrict cage viewing activities so as not to allow berleying to become a continuous activity with one operator taking up activity immediately another has ceased.

It is proposed that cage viewing activity will only be permitted during the first 15 days of any calendar month outside the pupping season. The remaining days of each month will allow for a rest period and to monitor Sea-lion behaviour.

Further, cage viewing permits will be issued in 5 day blocks allowing for three 5 day periods per month, with any one permitted operator being limited to a maximum of six, 5 day periods between pupping seasons. This will assist in distributing the available periods amongst recognised operators, and to allow for other research periods (ie non-commercial berleying).

A number of conditions for the issue of a berley permit will apply. They include:

- Provision for a berth aboard for a DENR officer (or nominee) to allow monitoring of operations and to co-ordinate any research activities;
- all berleying to be undertaken using fish based products only. Berley products may be sampled at anytime to ensure compliance;
- all berley products, other than fish oil, to be stored below 4° Celsius to minimise the risk of disease being introduced into the marine environment;
- all ropes used to secure baits or other items to the vessel to be of natural fibre (ie manila) to safeguard any shark from accidental ingestion;
- all floats associated with berleying activities to be either balloons or black painted floats to minimise the risk of ingestion by sharks;
- only one vessel at any one time will be permitted to berley;
- all berleying activities will cease immediately if instructed so by the DENR officer (or nominee);
- notification prior to berleying activities will be required to be lodged with local Coastguard, Abalone Divers Association, DPI-Fisheries and DENR officers, identifying vessel's name, location and period of activity;
- public notification will also be required via local printed media; and

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- a berley pennant (as specified by DENR) must be flown from the vessel during berleying activities. No other vessels should approach or remain within 200 metres of any vessel flying the berley pennant without the agreement of the Skipper of the approved vessel;
  - any onshore activities within the conservation park will require separate prior approval and conditions may apply; and
  - licence applicants will be encouraged to submit a Code of Ethics for their operation. Such a code may become part of permit approval. Conservation, education and a willingness to co-operate with any research program should form the basis of any code of ethics.

To assist in the implementation of this strategy DENR will apply appropriate fees for cage viewing licences. This fee structure needs to reflect the impact this strategy may have on DENR regional resources and contribute to research programs.

#### **6.4 RESEARCH ON THE WHITE SHARK**

Biological research is an integral component of the management plan for the white shark. It is because so little is known of its population status, its distribution and behaviour, its biology and the impact that fishing and cage viewing has upon it, that management has to take a precautionary approach to ensure the preservation of this magnificent animal.

While this document does not present a research strategy for the white shark, it suggests some broad directions and integrated activities that would assist in the promotion of a South Australian based research program.

Cage viewing tours offer an ideal opportunity to collect baseline information on white sharks. It is suggested that operators be required to fill out a daily log sheet including details on date, location, berleying activity, numbers of sharks sighted, and diving activities undertaken. These data will not only be useful in establishing observation frequency but will provide -

- long-term data regarding abundance and distribution in areas commonly targeted;
- information regarding the value of the eco-tourism resource; and
- feed-back to operators regarding the long-term viability of the industry.

Game fishing activity can also provide important research information on the white shark. While game fishing clubs actively promote "tag and release" of white shark, tagging is of little or no use if records are not submitted to appropriate research authorities. Currently, all tags for fishing clubs are distributed free of charge by NSW Fisheries, and data are held in their database. The number of tag and release records claimed by South Australian game fishers greatly exceeds the records in the database.

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It is suggested that any permit issued for "tag and release" fishing of the white shark will be subject to a research levy and conditional to the lodgement of all required data relevant to the capture.

The incidental capture of white shark in commercial fishing operations can also provide a great deal of biological information. Provision should be made to encourage commercial fishers to record information of the capture, and to participate into the research of the shark by either taking necessary samples and measurements, or by landing the shark for examination. However, this provision may compromise the recently introduced prohibition on the taking of shark by commercial fishing operators.

It is proposed that a national workshop be organised to develop a research plan for white sharks that covers issues of both general relevance to the biology and ecology of white sharks and to issues more specific to the management of the species in South Australian and Australian waters. This research plan would facilitate coordination of research activities and provide a benchmark against which applications for research could be evaluated.

***Proposal 6***

*That a national workshop be organised to develop a research plan for white sharks that covers issues of both general relevance to the biology and ecology of white sharks and to issues more specific to the management of the species in South Australian and Australian waters.*

Any application for research that involves cage viewing or capture of the white shark should be critically reviewed prior to any permit being issued. Review criteria should include scientific merit, research experience of the applicant and their ability to undertake the described research, relevance to white shark issues and current data sets and the logistics and funding constraints of the applicant.

Any trip that includes a research component, and it is likely that many research trips will be sponsored from paying customers on board a vessel, should be conditional to the submission of a written report detailing activities undertaken and preliminary observations within some reasonable time frame after completion of the trip, and submission of reports and papers generated by research activities.

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- Strong, W.R., Murphy, R.C., Bruce, B.D. and D.R. Nelson. (1992). Movements and associated observations of bait-attracted white sharks, *Carcharodon carcharias*; a preliminary report. In 'Sharks: Biology and Fisheries'. (ed. J.G. Peperell.) *Australian Journal of Marine and Freshwater Research* **43**, 13-20.

**MANAGEMENT OF  
THE WHITE SHARK  
IN SOUTH AUSTRALIA**

A SUPPLEMENTARY REPORT

by

Jon Presser, PISA Fisheries  
Ross Allen, Department of Environment and Natural Resources

FEBRUARY 1996

## SUMMARY OF RECOMMENDATIONS

### RECOMMENDATION 1

*That Regulation 35C of the Fisheries (General) Regulations 1984 be amended to:*

- (a) prohibit the use of blood, bone, meat, offal or skin of an animal (other than in a rock lobster pot or fish trap) within two nautical miles of the mainland of the State or all islands and reefs of the State which are exposed at low water mark; and*
- (b) include a prohibition on the use of a mammal or any product of a mammal in all marine waters of South Australia.*

### RECOMMENDATION 2

*That the white shark (Carcharodon carcharias) be declared a protected species under Section 42 of the Fisheries Act 1982, prohibiting the capture, holding or killing of this species.*

### RECOMMENDATION 3

*That the use of wire trace with a gauge of 2mm or greater, and fishing hooks greater than size 12/0, be prohibited in all waters of South Australia.*

### RECOMMENDATION 4

*That the waters within 2 nautical miles of the low water mark of the Sir Joseph Banks Islands Conservation Park, Neptune Islands Conservation Park and The Pages Conservation Park be declared Conservation Parks under the National Parks and Wildlife Act 1972.*

### RECOMMENDATION 5

*That a limited number of exemptions to the berleying restrictions be provided to approved cage viewing operators pursuant to the National Parks and Wildlife Act 1972 and subject to conditions established by PISA Fisheries and the Department of Environment and Natural Resources.*

### RECOMMENDATION 6

*That a national workshop be organised to develop a research plan for white sharks that covers issues of both general relevance to the biology and ecology of white sharks and to issues more specific to the management of the species in all Australian waters.*

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## 1. INTRODUCTION

In May 1995 a discussion paper on the management of the white shark in South Australia was released for public comment. The report detailed six proposals for public discussion which were designed to:

- Restrict the activity of berleying specifically for attracting large sharks around all coastal areas, islands and reefs;
- prohibit the capture, holding and killing of the white shark;
- prohibit the use of large hooks and heavy gauge fishing trace to prevent the capture of large sharks;
- introduce a limited entry licensing system for the shark cage viewing industry in South Australia; and
- establish a strategic research program for investigation of the white shark.

Opportunities for public comment and submission to this discussion paper ended at the end of July 1995. A total of 73 submissions were received with approximately one-half from game fishing associations and recreational anglers with some affiliation with a game fishing club. Submissions were also received from conservation groups and members, scientists associated with research into the white shark and from charter boat operators (including game fishing and cage viewing charters). Responses were received from South Africa, United States, United Kingdom and New Zealand and represented the views of specialist researchers, the Shark Specialist Group of the International Union for the Conservation of Nature (IUCN) and the International Game Fishing Association.

Many of the submissions were detailed, addressing the six proposals of the discussion paper. This supplementary report considers the responses received and formulates a revised management proposal for government approval.

## 2. DISCUSSION

As expected, the proposal to declare the white shark a protected species generated the greatest response and comment. Some very emotive views were expressed and, in general terms, was a very divided issue.

Submissions favouring this proposal generally requested that all fishing activity that targets the capture of the white shark should be prohibited. It appeared that there was the perception that game fishing resulted in many sharks being killed which was threatening the survival of this top-level predator and much maligned creature of the sea.

On the other hand, submissions received from game fishing associations and members argued that their activities had very little impact on the white shark and that more effort

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should be directed at minimising or preventing the by-catch and killing of the white shark in commercial fishing operations. They believed that this aspect of white shark mortality is far more pertinent to the debate over the conservation of the white shark than recreational fishing that clearly causes minimal mortality to the white shark. It was a common theme in their submissions that they actively encouraged the release of any white shark caught in game fishing competitions and generally supported the conservation of the white shark. They disputed any suggestion that the population of white shark in South Australia was declining or under any threat of long term survival.

As a result of this debate being publicised in various magazines (particularly dive magazines) and media, the South Australian government is continuing to receive correspondence from individuals all over Australia and overseas supporting the proposal to protect the white shark. On 2 January, 1996 the government of Tasmania introduced legislation that provided total protection of the white shark in their waters. It is understood that other state governments and the commonwealth are considering similar legislation to afford the white shark greater protection.

Very little new information was revealed through the consultative process and responses to the discussion paper. Rather, some of the issues have been clarified and various interpretations of available information have been expressed.

It was claimed in the submission of The South Australian Game Fishing Association that the discussion paper was written with a bias against game fishing and presented moral arguments which were inconsistent with and unsubstantiated by available research data.

The discussion paper was written to reflect general opinions in this debate and to provide the anecdotal information together with the available scientific knowledge of the white shark. It is acknowledged that it is not a comprehensive report and that there were inconsistencies in some of the statements made. This, however, reflects the uncertain biological and behavioural knowledge of the white shark and the perceptions that are held by many in the community.

All evidence and points of view expressed in submissions have been considered objectively and are reflected in this supplementary report. Each proposal is discussed in light of the comment received.

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### 3. BERLEYING RESTRICTIONS.

#### *Proposal 1.*

*That Regulation 35C of the Fisheries General Regulations 1984 be amended to prohibit the use of a mammal or product of a mammal, or large quantities of fish oil and/or fish product as berley to attract large shark within two nautical miles of -*

- (a) the mainland of the State; or*
- (b) all islands and reefs of the State which are exposed at low water mark.*

This proposal was suggested with the intention to:

- Stop recreational anglers from specifically targeting large shark;
- restrict the expansion of charter operations for the cage viewing of shark; and
- minimise any potential risk to the health and welfare of the ecology and other users of the region.

The submissions received which expressed support for the total protection of the white shark accepted the intent of the proposed extension of the existing berley restrictions.

However, in line with their opposition to restrict or prohibit game fishing activities for large shark, the game fishing fraternity did not agree with the intent of the proposal which was to put a stop to all attempts to attract sharks to a hook or boat, whether it was for fishing or viewing purposes.

They fully endorsed the prohibition on the use of mammal products for berley or bait and suggested that the existing regulation be extended so that this ban apply to all waters of the State. This rule applies in all game fishing competitions and very stern action is taken over any angler breaking this rule.

The Victorian branch of the Game Fishing Association of Australia stated that their rules of competition includes - "that berley should not be dispensed in a manner where by wind, tide or current it shall be carried inshore to affect other users of the coastal waters". Similar rules and codes of conduct apply in other clubs and it is suggested that these are sufficient to prevent large scale berleying in sensitive areas.

While it is recognised that most recreational fishers may abide by strict rules of competition and codes of conduct established by game fishing clubs, fishing for large sharks is not necessarily restricted to these individuals or game fishing competitions.

The wording of the proposal in regard to the use of "large quantities of fish oil and product to attract large shark" attracted a lot of criticism in that it will present difficulties for enforcement and prosecution as it is not specific enough. Many operators who have fished for shark pointed out that they would often use less berley to attract shark than

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what a lot of weekend anglers would use to catch a feed of garfish. Suggestions for specifying a maximum quantity of berley that could be used for fishing could also be criticised for being cumbersome, difficult to enforce and unnecessarily restrictive.

It was often stated that Proposal 1 of the discussion paper makes a "mockery to commonsense" when considering the slicks of fish oil and waste products generated from aquaculture activities (eg tuna and snapper "farms") and general effluent discharge from factories and towns.

It is considered that the intent of Proposal 1 would be adequately met if the area of berleying restrictions, as specified in Regulation 35C of the *Fisheries (General) Regulations 1984*, was extended to include all islands and reefs of the State which are exposed at low water mark, together with the adoption of all of the recommendations of this report. It is also considered appropriate to prohibit the use of mammal products as berley or bait, and extend this prohibition to include all marine waters of South Australia.

***RECOMMENDATION 1***

*That Regulation 35C of the Fisheries (General) Regulations 1984 be amended to:*

- (a) prohibit the use of blood, bone, meat, offal or skin of an animal (other than in a rock lobster pot or fish trap) within two nautical miles of the mainland of the State or all islands and reefs of the State which are exposed at low water mark; and*
- (b) include a prohibition on the use of a mammal or any product of a mammal in all marine waters of South Australia.*

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#### 4. WHITE SHARK PROTECTION

*Proposal 2*

*That the white shark (Carcharodon carcharias) be declared a protected species under Section 42 of the Fisheries Act 1982.*

This issue was seen as being the principal theme of the total debate on the management of the white shark in South Australia and consequently generated the greatest response and comment.

In his submission, Rudy van der Elst of the Oceanographic Research Institute in Durban, South Africa expressed the importance of stating the underlying reasons for the protection proposal and the basis the white shark is to be managed. It was evident from the arguments of most submissions, both for and against this proposal, that there are three motivations in this issue.

The first argument is that the white shark is being depleted through excessive fishing pressures to such an extent that the long term survival of this species is being threatened and protection is essential. The second argument states that, regardless of the population status of the white shark, it should be protected because of its position in the marine ecosystem as the top-order predator. The third argument used is that community attitudes and perceptions toward deliberate targeting of white shark for the pure pleasure of capture or killing have changed to such an extent that this activity is deplored and should be legislated against.

A further consideration in this debate is the difference between conservation and preservation. While conservation measures can allow for some exploitation of a renewable resource, whether it is for commercial gain or recreational pleasure, the resource is managed in such a manner that ensures that the resource is enhanced or maintained at some predetermined and sustainable level. This is the basis of most fisheries management regimes and the principal objectives of the South Australian *Fisheries Act 1982*.

Preservation, on the other hand, is the total protection against any form of exploitation that may cause a depletion or have an adverse impact on the resource. In many instances, preservation measures are introduced for resources which are either non renewable or have a long recovery time if exploited.

The opinions expressed in submissions from the game fishing fraternity, while not necessarily arguing against the need for conservation of the white shark, oppose any evidence that the population status of the white shark is under any threat or is in severe decline. They presented a comprehensive discussion on this issue suggesting that there is insufficient scientific evidence to support this belief, and what anecdotal information is available suggests that there is an abundance of white shark.

They dispute any argument that implies that game fishing activities pose a threat to the

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population of white sharks, or are in any way responsible for an alleged decline of white sharks. They claim that the discussion paper was biased in its interpretations of research data and in the reporting of anecdotal evidence of the decline in shark numbers. They suggested that there exists many explanations which refute such claims and equal weight and credibility should have been given to reports of increased sightings of the white shark.

A common theme among the submissions opposing total protection of the white shark was that commercial fishing was a far greater threat to the white shark through many being maimed or killed through entanglement and capture in commercial fishing gear. The benefits to the shark of addressing the issue of commercial by-catch would far outweigh the benefits of any prohibition on the recreational capture of the white shark.

There were arguments put up to refute the claims that game fishing for white shark, with the use of light lines and prolonged capture of the shark, resulted in many fish dying from exhaustion or becoming susceptible to fatal attacks from other sharks once they are released. They suggest that results of tagging studies indicate good survival of a captured shark and that recreational fishing and tagging of white sharks can be a very effective way of achieving a scientific database on the white shark which will contribute to better management of this species.

There were some submissions in support of a prohibition on the landing and/or killing of white sharks, but suggested that there could exist recreational fishing opportunities under strict capture and release provisions. Mike Cappelletti of the Australian Institute of Marine Science in Townsville, suggests that if this activity is to be permitted, regulations should be introduced to enforce the use of a single 12/0 hook with trace crimps or swages at the hook, made from alloys that corrode quickly in seawater, and a ban on crown knots before the crimp. This will allow the trace to fall away from the hook in a timely manner if such gear is lost or cut in white shark encounters.

A common theme in nearly all submissions was the lack of substantial scientific knowledge relevant to the population status of the white shark or its population dynamics. This statement was used both for and against the proposal to protect the white shark.

The submission from the IUCN Species Survival Commission reflected the general argument in favour of the total protection of the white shark in their statement - "white shark, which are believed to have a particularly low reproductive rate, slow growth and late maturity, are particularly vulnerable to over exploitation. In the absence of sound biological data, protective measures of the species should be based on the informed establishment of a precautionary principle."

While it is believed that the precautionary principle should be applied, in view of the evidence suggesting that there is a low abundance of white sharks, the basis on which the protection proposal is mainly supported comes from the view that the shark is a "special" creature and that the capture of large animals for "sport" and gratification of a hunting instinct is not consistent with community values and beliefs.

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Dr Richard Allen of New South Wales reflected these views in his submission where he wrote:

"Killing any animal, ... especially those from the higher species, for the pure pleasure of it (one cannot really call it 'sport') is increasingly seen as an inappropriate way to manage our earth's resources, even if it can generate income in the short term. In the specific case of the great white shark, as was the case with the whaling industry, opportunity now exists to develop a sustainable industry based on tourism; one that respects the right of an animal species to exist in its own right, that preserves biodiversity and also has economic benefit."

The basis for the total protection of the white shark is not necessarily driven by the belief that this species is facing imminent extinction, but because of its position in the marine eco-system as the top order predator and that the deliberate targeting of white shark for the pure pleasure of capture or killing is no longer acceptable.

***RECOMMENDATION 2***

*That the white shark (Carcharodon carcharias) be declared a protected species under Section 42 of the Fisheries Act 1982, prohibiting the capture, holding or killing of this species.*

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## 5. RECREATIONAL FISHING GEAR RESTRICTIONS

### *Proposal 3*

*That the use of wire trace with a gauge of 2mm or greater, and fishing hooks greater than size 12/0, be prohibited in all waters of South Australia.*

This proposal is designed to prevent fishers from setting fishing gear that is considered specific to the catching of large white sharks while under the pretence of not doing so. This restriction will apply to both recreational and commercial fishing activities. It is recognised that this will not prevent the accidental capture of white sharks on fishing gear that has been set for other species using hooks of size 12/0 and smaller.

Responses to this proposal from the game fishing fraternity said that it would effectively put an end to recreational fishing for other large fish. They strongly believe that commercial fishing activities cause the great majority of fishing mortality on white sharks, and if this is seen as a problem, then commercial fishing which causes the problem should be targeted.

There were many submissions similar to Mike Cappel's (explained in section 4 above) requesting a general prohibition on the use of stainless steel fishing tackle. There is a general concern that the use of tackle that does not corrode may lead to needless mortality.

It was also suggested in some submissions that if permits were to be provided for the capture of large white sharks that heavy duty fishing tackle should be used to allow the quick retrieval of the fish and a lower chance of the line breaking. This point was also used as an argument to support the continuing use of large fishing tackle with a corrosive link at the hook end to ensure better protection of a large white shark if it was accidentally caught.

The argument for the continued use of steel trace with a gauge of 2mm or greater, and fishing hooks greater than size 12/0 cannot be supported when it is considered that the use of this gear is specific to the capture of large white sharks, which is recommended as a protected species.

### **RECOMMENDATION 3**

*That the use of wire trace with a gauge of 2mm or greater, and fishing hooks greater than size 12/0, be prohibited in all waters of South Australia.*

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## 6. MANAGEMENT AND LICENSING OF CAGE VIEWING CHARTERS.

### *Proposal 4*

*That a limited entry licensing scheme for the white shark cage viewing industry be developed under the National Parks and Wildlife Act, 1972.*

### *Proposal 5*

*That the boundaries of the Sir Joseph Banks Islands Conservation Park, Neptune Islands Conservation Park and The Pages Conservation Park be extended under the National Parks and Wildlife Act 1972, to include all waters within 2 nautical miles of the low water mark, to establish better control over access to white sharks. Continued access to these areas is to be provided to all other recreational and commercial fishing activities subject to the provisions of the Fisheries Act 1982.*

Comments on Proposal 4 were focussed more on the question of whether it was appropriate to allow berleying and cage viewing activities in areas adjacent to pinniped colonies and any marine protected area rather than on whether a limited licensing arrangement should be introduced. Many of the submissions from conservation groups and some individuals saw this proposal as being contradictory to the objective of providing greater protection to sea lions and fur seals and questioned the use of the term 'eco-tourism' where it involved "pouring offal into bays which encloses the main breeding areas (of pinnipeds) with the hope of attracting what is thought to be one of the seals main predators". They suggested that there was a need for total protection zones or sanctuary areas as well as an incentive for operators to search for other areas to encounter the white shark.

Similar comments were made regarding the proposed extension of conservation parks to include all waters within 2 nautical miles of low water mark. It was considered that there were inconsistencies between the suggestion of allowing fishing and boating activities in all of the extended parks with the stated objectives of providing greater protection to the breeding colonies of pinnipeds. It was suggested that providing a guarantee of continued unrestricted access to both commercial and recreational fishing creates a dangerous precedent and weakens the protection of other marine parks by denying control by the Department of the Environment and Natural Resources. The Conservation Council of South Australia considered that there should be similar restrictions to those that apply to the waters adjacent to the sea lion breeding colonies at Seal Bay and Point Labbatt. In these areas, all boating and fishing activities are totally excluded.

It was strongly suggested in many submissions that the Sir Joseph Banks Island Conservation Park, Neptune Island Conservation Park and the Pages Conservation Park should be considered for management as Marine Parks and that consideration should also be given to extending this concept to other islands and the extensive areas of the Great Australian Bight where pinniped colonies are established.

Many other submissions that commented on this proposal expressed an opposite opinion. They considered that this proposal compromised the management of the fishery resources

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around these islands and opposed any transfer of management of the marine waters from the Fisheries Act to the National Parks and Wildlife Act. While not opposing any moves to provide greater protection to sea lion and fur seal colonies, there was a common concern of the possible alienation of all fishing activity from these areas if the marine waters adjacent to these islands came under the control of the Department of Environment and Natural Resources.

Similarly, many submissions supported the need for a limited entry licensing arrangement but considered that it was inappropriate for this to be developed pursuant to the National Parks and Wildlife Act.

There were some submissions that expressed the opinion that the initiatives to protect the white shark and the stories against game fishing were being generated by a few self-interested cage viewing operators. They considered that allowing a privileged few to get a commercial gain from the white shark while preventing any form of fishing activity for the shark was discriminatory. Charter operators that opposed the need for a limited licensing arrangement and any restriction of cage viewing activities with the argument that any pleasure diver who wishes to build a cage and put it in the water should be able to do so and that there should be no restrictions on divers or any person looking at fish or any creature in the water.

A common view, however, recognised the need for some control of the numbers who undertake cage viewing activity and regulate what they do and how they do it. Not a lot is known of the effect of prolonged and regular contact between humans and sharks, with some expressing the opinion that the recent failures of cage viewing expeditions is due to the regular berleying and boating activities in limited areas.

Submission from a cage viewing operator argued that there is a need to regulate the number of operators to allow better management of the activity to ensure a greater probability of successful sightings and to assist in maintaining some profitability in this industry. Security of tenure over the activity is required to allow advanced scheduling of expeditions.

The increased activity in cage viewing and photography in recent years has seen a dramatic increase in the number of people attempting to run expeditions resulting in greater conflict and prolonged berleying activity at more popular sites. The prolonged activity at a few sites is believed to be having some impact and could be a reason for the recent trend of unsuccessful tours. The repercussions for those operators who have been operating successfully for many years and have invested a lot of money into their business ventures, is large.

The opinion was expressed that South Australia was fast earning the reputation of a "no show" area and that film makers and tourists were looking elsewhere to obtain their material and spend their money.

It was also claimed that the economics may defeat attempts to establish a healthy and

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viable eco-tourism industry if operators are not given adequate protection. In a regulated form, tourism could be worth millions of dollars and play an important role in preventing the imminent disappearance of the white shark and promoting greater awareness and respect for this magnificent species.

Some submissions suggested that one condition of the licence would be a requirement for all sharks sighted to be identified by visible markings and colourings and photographed where possible. Notes of shark behaviour could be recorded and all records and photographs submitted to a central agency for collation and research to allow better assessment of the population size, distribution and individual shark behaviour.

The principal reason for Proposal 5 in the discussion paper which suggested the extension of the boundaries of conservation parks where cage viewing is commonly undertaken be extended, pursuant to the National Parks and Wildlife Act 1972, to include all waters within 2 nautical miles of the low water mark, is to provide the administrative framework for a limited licensing arrangement to proceed. It is envisaged that the licensing and management of the cage viewing activity under this arrangement would be similar to that applying to access rights in terrestrial conservation parks.

The proposed extension to the boundaries of existing conservation park islands would also provide for a consistent management approach to monitoring the potential impacts of cage viewing on the pinniped populations and other wildlife utilising these islands.

This situation currently exists at Dangerous Reef, off Port Lincoln, which has been declared a Conservation Park under the National Parks and Wildlife Act 1972.

In 1989 the waters surrounding the reef were added to the park to manage a tourist venture which included a pontoon moored next to the reef. The pontoon incorporated a platform and a cage section with underwater viewing windows.

Tourists were regularly transported to the structure by vessel from Port Lincoln to view the wildlife inhabiting the reef and the marine life maintained in the caged section. The platform has since been removed from the park and is now used as a tuna farm in Boston Bay.

Some submissions raised the concern over inadequate resources to properly manage and monitor these protected areas. Insufficient funds and downsizing of government agencies are leading to problems of insufficient policing and surveillance of activities. One writer suggested that by allowing exclusive access to a resource could result in more problems being created than problems being solved.

To maximise the existing resources available, with officers from both PISA Fisheries and Department of Environment and Natural Resources based at Port Lincoln, a joint management framework between the two departments is to be established. This will provide a coordinated approach to managing the cage viewing industry, as well as research and monitoring of marine species and terrestrial wildlife inhabiting the islands.

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Recognising the need for a better defined management plan for the waters adjacent to conservation park areas, particularly the need to restrict berleying activities and to provide sanctuary areas, it is recommended that all waters adjacent to the Sir Joseph Banks Island Conservation Park, Neptune Islands Conservation parks, and The Pages Conservation Park, within 2 nautical miles of the low water mark, be declared as conservation parks under the National Parks and Wildlife Act 1972. General boating, diving and fishing will be permitted to occur and permits would be provided to approved cage viewing operators.

Following the adoption of this recommendation, it is further recommended that a limited number of exemptions be provided, to allow approved operators to berley for shark in these waters for the purposes of cage viewing and photography.

**RECOMMENDATION 4**

*That the waters within 2 nautical miles of the low water mark of the Sir Joseph Banks Islands Conservation Park, Neptune Islands Conservation Park and The Pages Conservation Park be declared Conservation Parks under the National Parks and Wildlife Act 1972.*

**RECOMMENDATION 5**

*That a limited number of exemptions to the berleying restrictions be provided to approved cage viewing operators pursuant to the National Parks and Wildlife Act 1972 and subject to conditions established by PISA Fisheries and the Department of Environment and Natural Resources.*

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## 6. NATIONAL RESEARCH STRATEGY ON THE WHITE SHARK

The proposal for a national workshop to determine a strategy for research into the white shark received general support from nearly all submissions that commented on this issue. Many considered that this was a necessary precursor to any management plan being implemented on the grounds that there is insufficient knowledge on the white shark to justify any need for its immediate protection or restrictions on any activity that impacts on the shark.

The game fishing fraternity considered that it is sensible to fully discuss and explore all data and management strategies in a national forum prior to, rather than after, the implementation of such far reaching conservation measures. They considered that recreational fishing activity would have an integral part to play in undertaking extensive tagging programs, recording and monitoring of shark sightings, provision of fishing vessel facilities and funding for research, and the taking of live tissue samples to assist with research programs. It was apparent that many supported research into the impacts of recreational capture and release fishing simply to justify why this activity is not impacting on the shark populations as appears to be some people's perceptions.

Some submissions expressed some scepticism over the purpose of a national workshop. While it may be seen to be a good idea, it is considered that there is extreme competition for research funding and there exists greater priorities in research activities. The glamour status of the white shark should not influence the allocation of scarce research resources and greater efforts could be directed into obtaining better data from existing sources, such as recreational and commercial fishers. The paucity of data concerning commercial by-catch is considered by some to be of serious concern for the effective management of the white shark and other shark species.

There was comment suggesting that commercial operators should be compelled, rather than simply encouraged (as suggested in the discussion paper) to record information of the incidental capture of the white shark and participate in research programs, and that more activity is required to develop methods of fishing that minimise the capture of white shark. This latter view is quite apparent in many submissions in that it was considered that incidental mortality from commercial operations was far more significant than any other human interaction with the white shark.

There were many suggestions to what research could and should be undertaken, some to justify the need for protection or otherwise with other suggestions to research simply to improve our knowledge of the behaviour and biology of the white shark to improve our management strategies.

Others had a contrary view, and considered that a precautionary approach should be adopted and regardless of what scientific and objective information that exists on the population status and behaviour of the white shark, that there is sufficient worldwide concern to justify its protection.

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One submission suggested that, regardless of the research or management intentions relating to the white shark, this activity must be accompanied by a commitment to public education and extension of all material. This action should be a statewide initiative and conducted in a coordinated manner and not taken up separately throughout the community without focus and with unnecessary duplication by small groups.

Research is fundamentally determined by the provision of funds and the benefits that are derived from the extra knowledge that will be gained from the research. Some may argue that if the white shark is totally protected then research into how the resource can be managed according to the principles of sustainability is not a priority for funding bodies that derive their research dollars from the commercial fishing industry. Any research activity that is proposed should be funded by those who are deriving a benefit from it.

Initially, however, it is suggested that an investigation be undertaken to seek a federal grant to sponsor a national workshop in Adelaide to develop a research plan for white sharks that covers issues of both general relevance to the biology and ecology of white sharks and to issues more specific to the management of the species in all Australian waters.

***RECOMMENDATION. 6***

***That a national workshop be organised to develop a research plan for white sharks that covers issues of both general relevance to the biology and ecology of white sharks and to issues more specific to the management of the species in all Australian waters.***

Ref No: DF 19/71

29 May 1996

16th Floor, 25 Grenfell Street, Adelaide, South Australia  
GPO Box 1625 ADELAIDE SA 5001  
DX210

Telephone: (08) 226 2314 Facsimile: (08) 226 2320

Mr Bruce Male  
Executive Officer  
Endangered Species Scientific Committee  
ANCA  
GPO Box 636  
CANBERRA ACT 2601

Dear Mr Male

**Public nomination to the Endangered Species Protection Act**

I refer to your letters of 4 April 1996 addressed to Mr Dennis Mutton, Chief Executive of the Department of Environment and Natural Resources. I have been requested to respond on behalf of Mr Mutton on this matter.

**Great White Shark (*Carcharodon carcharias*)**

The submission for the nomination of the great white shark referred to a discussion report prepared by Presser and Allan of the South Australian government. This discussion paper was released in May 1995 as part of the consultation process in determining appropriate management arrangements to apply to white sharks and related activities, such as game fishing and cage viewing, in South Australia. The report detailed six proposals for public discussion which were designed to:

- a) restrict the activity of berleying specifically for attracting large sharks around all coastal areas, islands and reefs;
- b) prohibit the capture, holding and killing of the white shark;
- c) prohibit the use of large hooks and heavy gauge fishing trace to prevent the capture of large sharks;
- d) introduce a limited entry licensing system for the shark cage viewing industry in South Australia; and
- e) establish a strategic research program for investigation of the white shark.

*A key economic development agency of the South Australian Government*

This issue which was seen as being the principal theme of the total debate on the management of the white shark in South Australia and consequently generated the greatest response and comment was that relating to the total protection of the species.

It was evident from the arguments of most submissions, both for and against this proposal, that there are three motivations in this issue.

The first argument is that the white shark is being depleted through excessive fishing pressures to such an extent that the long term survival of this species is being threatened and protection is essential.

The second argument states that, regardless of the population status of the white shark, it should be protected because of its position in the marine ecosystem as the top-order predator.

The third argument used is that community attitudes and perceptions toward deliberate targeting of white shark for the pure pleasure of capture or killing have changed to such an extent that this activity is deplored and should be legislated against.

A further consideration in this debate is the difference between conservation and preservation. While conservation measures can allow for some exploitation of a renewable resource, whether it is for commercial gain or recreational pleasure, the resource is managed in such a manner that ensures that the resource is enhanced or maintained at some predetermined and sustainable level. This is the basis of most fisheries management regimes and the principal objectives of the South Australian *Fisheries Act 1982*.

Preservation, on the other hand, is the total protection against any form of exploitation that may cause a depletion or have an adverse impact on the resource. In many instances, preservation measures are introduced for resources which are either non renewable or have a long recovery time if exploited.

There were many responses to our paper that, while not necessarily arguing against the need for conservation of the white shark, oppose any evidence that the population status of the white shark is under any threat or is in severe decline. It was asserted that there is often a bias in the credibility given to the reporting of anecdotal evidence and the interpretation of research information that supports the claim that shark numbers are declining. There exists many explanations which refute such claims and equal weight and credibility should be given to reports of increased sightings of the white shark which suggests that there is an abundance of white shark.

Any moves to protect the white shark is purely window dressing if it is not supported by some action that addresses the incidental capture of white shark in commercial fishing operations. White sharks are often maimed or killed through entanglement and capture in commercial fishing gear, and in most cases, this is unavoidable. The

prohibition on the taking of white sharks by commercial fishers in South Australia was introduced in September 1994 to discourage the indiscriminate killing of the white shark by some operators.

A common theme in nearly all submissions to our discussion paper was the lack of substantial scientific knowledge relevant to the population status of the white shark or its population dynamics. This statement was used both for and against the proposal to protect the white shark.

The submission from the IUCN Species Survival Commission reflected the general argument in favour of the total protection of the white shark in their statement - "white shark, which are believed to have a particularly low reproductive rate, slow growth and late maturity, are particularly vulnerable to over exploitation. In the absence of sound biological data, protective measures of the species should be based on the informed establishment of a precautionary principle."

While it is believed that the precautionary principle should be applied, in view of the evidence suggesting that there is a low abundance of white sharks, the basis on which the protection proposal is mainly supported comes from the opinion that the shark is a "special" creature and that the capture of large animals for "sport" and gratification of a hunting instinct is not consistent with community values and beliefs.

Dr Richard Allen of New South Wales reflected these views in his submission where he wrote in his response:

"Killing any animal, ... especially those from the higher species, for the pure pleasure of it (one cannot really call it 'sport') is increasingly seen as an inappropriate way to manage our earth's resources, even if it can generate income in the short term. In the specific case of the great white shark, as was the case with the whaling industry, opportunity now exists to develop a sustainable industry based on tourism; one that respects the right of an animal species to exist in its own right, that preserves biodiversity and also has economic benefit."

We cannot support the listing of the white shark as endangered at this point in time because its status is not known with any significant degree of confidence, and that there are conflicting anecdotal reports relating to its abundance. It is, however, recommended that the species *Carcharodon carcharias* be listed as "indeterminate" and that a national research plan be developed for the white shark that covers issues of both general relevance to the biology and ecology of white sharks and to issues more specific to the management of the species in all Australian waters.

The basis for the total protection of the white shark should not be driven by the belief that this species is facing imminent extinction, but because of its position in the marine eco-system as the top order predator and that the deliberate targeting of white shark for the pure pleasure of capture or killing is no longer acceptable.

## Grey Nurse Shark (*Carcharias taurus*)

The grey nurse shark (*Carcharias taurus*) is not common in the waters of South Australia. The occasional sighting or capture is made, however these incidences are very remote.

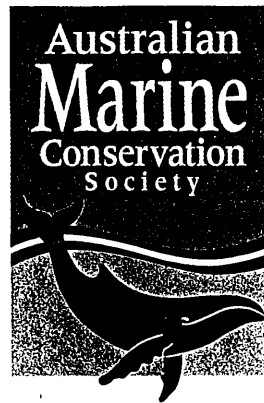
Much of the discussion relating to white sharks above, could also be relevant to the grey nurse shark. However, we have insufficient knowledge or experience relating to the grey nurse shark to offer an objective comment on the public nomination of this species for listing under the Endangered Species Act.

Yours sincerely



David Hall  
**DIRECTOR OF FISHERIES**

cc Dennis Mutton



13 June 1996

The Honorable Rob Kerin  
Minister of Primary Industries and Fisheries  
GPO Box 1625  
Adelaide, SA 5001

Dear Minister,

I am writing to you on behalf of members of the Australian Marine Conservation Society (AMCS) to request that your Department supports our measures to ensure the future conservation of the Great White Shark, currently found in South Australian waters.

In its campaign for the sustainable management of elasmobranchs (Sharks, Skates and Rays), AMCS is pleased to receive the support of the Australian Seafood Industry Council (ASIC), which also recommends an end to targeted fishing for the Great White Shark in the waters of all Australian States.

At a meeting on 5th September 1995, ASIC, which represents the fishing and aquaculture industries Australia-wide, adopted the following resolution:

"The Australian Seafood Industry Council is aware of the susceptibility of the Great White Shark to targeted fishing pressure and will seek an end to existing and any proposed targeting fishing by requesting fisheries agencies protect this species under appropriate fisheries legislation."

We therefore seek your Departments support in protecting this species by declaring it a protected fish species and implementing all of the proposals in your 1995 Paper No.6, Management of the White Shark in South Australia.

International concern over the decline in shark numbers is growing, due largely to the fact that the trade and status of sharks is largely unknown. In fact, sharks were the only fishery issue brought before a recent Convention for the International Trade in Endangered Species (CITES) conference last November, where a resolution was passed calling for a study of the biological status of sharks and the effects of the international trade in sharks and shark products. This resolution has set an important precedent. Very rarely are non-listed species debated in the CITES forum. It happened because very little is known about total numbers, and that shark's slow growth rate, late maturity and low fecundity make them vulnerable to over exploitation.

Even more recently, a panel of 32 International biologists met in May, at the Zoological Society, London to prepare a list of marine fish species with their categories and criteria of threat for immediate inclusion in the 1996 IUCN Red List of Threatened Species. The biologists examined the status of 152 fish species and classified 131 as threatened. They say that these should be added to the Red List of threatened animals, which is due to be published at the World Conservation Congress in Montreal in October. An assessment of Vulnerable for the white shark was reached on the basis of its small populations, very low numbers of mature females, declining catches in many areas, very low fecundity and habitat degradation in inshore breeding and nursery grounds.

The Great White is found throughout temperate and subtropical regions of the world's oceans. It is one of the least understood of all the sharks and although detailed information on the population status of the Great White Shark is scarce, that which does exist suggests that it is a rare animal. It was this conclusion that led the management agencies in South Africa and California to adopt the precautionary principle and declare the animal a totally protected species in their waters. These agencies have benefited from increased international respect for their forward thinking management.

Formerly the Australian Littoral Society Inc.

**Australian Marine Conservation Society Inc.**

Postal Address : PO Box 49, Moorooka Q 4105 Ph (07) 848 5235 Fax (07) 892 5814  
e-mail: amcs@peg.apc.org

Tasmania is the first Australian state to take the initiative and has moved swiftly to amend its fisheries regulations to provide for total protection of Great White Sharks in its waters.

AMCS is also encouraged that the Australian National Conservation Agency (ANCA) is considering applying for a CITES listing of the species.

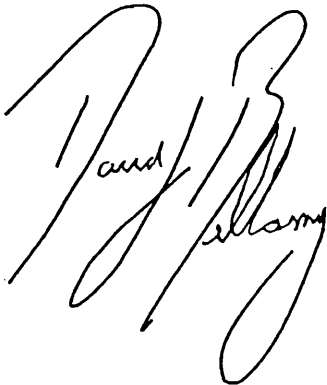
In marine ecosystems, 'ecological' extinction occurs when a species is reduced to such low abundance that, although still present, it no longer plays the ecological role it used to. This may soon be the case, if it is not already so, with the Great White Shark.

AMCS hopes that South Australia, New South Wales, Victoria, Western Australia, Queensland and the Commonwealth will have protected the Great White in their waters in time for the Second World Fisheries Congress, being held in Brisbane from July 28th to 2nd August of this year. The IUCN Shark Protection Group is meeting at this conference, so having the required legislation in place by then will show the international community that Australia is aware of and working towards the sustainable management of elasmobranch fisheries. Tasmania has shown already that this is a realistic deadline to meet.

Alternatively, your Department may decide it to be advantageous to publicly announce its total protection in your State during the congress, when international media will be in attendance.

I look forward to your early reply.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'David Bellamy'. The signature is fluid and cursive, with the first name 'David' written in a larger, more prominent script than the last name 'Bellamy'.

Professor David Bellamy OBE  
Vice President